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VOICE CULTURE MADE EASY

J. LOUIS ORTON

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VOICE CULTURE MADE EASY

BY

J. LOUIS ORTON

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"What you wish to do quickly, set about slowly."—
A PROVERB OF THE JESUITS.

"Measure not dispatch by the times of sitting, but by the advancement of the business."—FRANCIS, LORD BACON.

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PREFACE TO FIRST EDITION

The first book I wrote was published in February, 1904. It was *Three Aspects of Voice Production: Physiological, Practical, Hygienic.* A few years earlier I had commenced the investigation and experimentation which led to the writing by me of *Rational Hypnotism* and other psychological works, and to my collaboration, in practice and authorship, with Emile Coué. Throughout, however, my interest in voice-culture has never waned.

James Braid, the Manchester surgeon, who (about 1841) coined the term "hypnotism," objected to being called a "hypnotist." He protested that he was no more a hypnotist than a castor-oil doctor. Similarly, I would be viewed as a hygienist and teacher who has used hypnotism extensively (because of its very wide applicability, from a health and an educational standpoint), but who was primarily a singer and voice-culturist who was employed as such in four military hospitals, where his duty consisted in the treatment of stammering, stuttering, and other speech disorders, in addition to voice-culture as a health restorative for soldiers suffering from neurasthenia, gassing, and so on. In that connection I wrote a work on *The Cure of Stammering, Stuttering, and other Functional Speech Disorders.*

Perhaps I should mention that I was trained on the broad lines of the old Italian school, and that my voice has lasted so well that, during the time I was working at the Coué-Orton Institute, Albert Visetti (the singing-master who was then Principal of the Royal Academy of Music) tried to persuade me to go on to the operatic stage. I was working under contract at the

time, and for other reasons also was indisposed to follow Visetti's advice; but, as, despite my sixty-one years, my voice (a robust tenor) shows no obvious signs of "wear," Visetti's statement that my age would not prove an obstacle to the attainment of fame as a vocalist was, I am convinced, correct. However that may be, my vocal demonstrations have been of great use to me, and—I am entitled to say—to others also. On many occasions I have been asked to give self-confidence to professional singers, and, not infrequently, the applicants have stood in need of a sound basis of voice production—a fact which I felt I ought to make clear. The results that accrued were such as could not, by any possibility, have been obtained by hypnotism alone; but, as I was known to employ hypnotism, the credit due to my endeavours and their results was rarely given wide publicity.

Sir Henry Wood has written : " I myself have had lessons from seventeen of the most celebrated professors, British and foreign, and, in my opinion, only two of them were qualified and gifted to teach singing." A good, or even superb, singer is not necessarily, nor likely to be, a good instructor. Charles Lunn, the Philosopher of Voice, to whom I personally was much indebted, once wrote to me : " I think Sims Reeves was the greatest singer I ever heard but when he wrote or spoke, like Jean de Reszke, he often attested nonsense."

In this work, I am attempting, on tested lines, to make voice-culture *easy*, thereby inferring that it has been found or considered *difficult*. The book itself, and especially my first chapter, emphasises my attitude. I do not claim, it will be observed, that this book covers the whole field, but I do claim that, used aright, it will enable one to master the fundamentals of voice-culture. I would have the student read the work up to the point where he (or she) is asked to perform some test; then, having complied with that request, to continue the

reading on the same principle throughout. I make that request because otherwise the student is likely to err through insufficiency of knowledge. After the first reading, the book should be read again throughout and (may I hope?) be used, in effect, as a sort of mentor.

Speech and song, viewed as studies, overlap, and each can help the other. Nearly everyone has to converse daily (almost hourly), consequently the value of this book is not restricted to those who use, or desire to use, their voices in public. Nevertheless, I do hope it will be the means of encouraging many persons to make public use of their voices, although hitherto these persons may have used their voices in private only. My most fervent wish in writing the book is that it may help to clear away the mystery that has surrounded voice culture; and, if it does so, assuredly it will do something towards increasing the popularity of a study valuable from the standpoints of artistry, of business, professional, and social life, of health, and of happiness.

J. LOUIS ORTON.

25th August, 1938.

PREFACE TO SECOND EDITION

Towards the end of 1938 and during the early months of 1939 my wife and I toured throughout Italy and Sicily. The judgments passed, in my second chapter, regarding the deterioration of vocal culture among present-day Italians were further confirmed—despite the few brilliant exceptions. I was therefore rather amused by parts of a review, in the Milanese magazine *Rivista Musicale Italiana*, by the author of a recent book on singing. He was kind enough to ascribe to me "a complete knowledge" of the traditional methods of the Old Italian School, but he declared that the preservation of freshness and quality in my voice is "so much the

more astonishing because the vocal organ is English." That supercilious remark reminded me, by contrast, of the lamentations of the Milanese *Il Mondo Artistico* regarding the spoiling of voices by teachers at the conservatoires.

The Italians have been tempted effectually to take us, as a nation, at our own low valuation vocally. "Our admirable chorus singers," wrote Sims Reeves, "may fairly compare with those of any country in the world, and possibly surpass all in mellowness of tone. Surely there is no country, no people that more naturally prefers true feeling and mellowness to theatrical and musical exaggeration than our own. We appreciate warmly the genuine article, but dislike stridency and fuss. Considering the character of our musical genius, it has always been especially notable for taste and sweetness."

Yes, we have the material; what is deficient is due and practical recognition of that fact. I am therefore much gratified by the favourable reception of this book among English-speaking people. A radio broadcast review from Sydney, Australia, after describing the work as "a perfect gem of a book," says that it "makes voice culture as easy as it can be without the personal training of a front rank expert." Mr. K. P. Hunt, the editor of *Radio Pictorial*, wrote in that magazine that this book would "prove of great interest and value to many radio aspirants," and proceeded to declare: "Apart from those aspiring to broadcast, we should say that if everyone now broadcasting, including crooners and croonettes, read this book, the standard of the vocal art as heard over the wireless world would show a great improvement."

Sir James Crichton-Browne, F.R.S., the late great alienist, having written expressing the opinion that chapters in my book on *Personality: its Nature, its Operation, and its Development*, on speech-making and public delivery, personality in song, acoustics and

buildings, etc., are "excellent." I hope I shall not be accused of egotism in venturing to refer to that book for extensions of my principles to *artistry*. Eventually (I hope) I shall place before the public a book specifically on *Eloquence in Speech and Song*.

J. LOUIS ORTON.

29th May, 1941.

PREFACE TO FOURTH EDITION

Essentially (I beg to emphasise again) this book is intended primarily for vocal students who cannot avail themselves of genuinely expert tuition; but experience has shown that many professional singers and speakers have derived considerable benefit from its perusal. I am gratified, but (frankly) not surprised.

Regarding my eighth chapter, some have supposed that I have abandoned hypnotism in relation to voice culture. They have been in error; my aim in this book has been to prevent, as far as practicable, misuse of the mental factor in voice culture—especially the mental attitude towards endeavours. But in other directions also, rational hypnotism can be of almost inestimable benefit to singers and speakers—always on condition that it is not made a medium for instilling undeserved confidence in themselves or in anything unworthy of confidence. In *Rational Hypnotism* especially, and since in *Hypnotism the Friend* of Man and *Hypnotism made Practical*, I dealt with the hynotic measures employed and with their results.

J. LOUIS ORTON.

"Kingsthorpe,"
Hawthorn Drive,
Willowbank,
adjoining Uxbridge (Middlesex).
21st February, 1945.

CHAPTER I

ON PUTTING THE HORSE BEFORE THE CART.

"When the understanding appropriates things before depositing them in the memory, whatever it afterwards draws from thence is properly its own."—ROUSSEAU.

DURING the early part of the nineteenth century, the chorus of the opera house at Bergamo, in Lombardy, was excellent, the principals mainly mediocre. Amongst the chorus singers was a very modest, very poor young man, much beloved by his companions. To aid his aged mother, this young man added to his work as a chorus singer, that of a tailor, and it thus transpired that he called one day on the celebrated singer Nozari to deliver a pair of pantaloons. Nozari looked very earnestly at the young man, then remarked kindly: "It seems to me, my boy, that I have seen you somewhere."

"That is very probable, sir," was the reply; "you may have seen me at the theatre, where I sing in the chorus."

"Have you a good voice?" asked Nozari.

"Not particularly, sir; it is difficult for me to reach G."

Nozari approached the piano, remarking: "Let us see. Let me hear you sing up the scale."

The young man obeyed, the G was sung, Nozari intimated that the young man must continue to ascend, but the latter paused.

"Sing A. Courage! Go on!" said Nozari.

"Indeed, sir, I cannot."

"Sing A immediately, I say."

The A was sung.

"Now sing B."

"Really, sir . . ."

"Sing B, I say, at once, or . . ."

"Oh, do not be angry with me, sir, and I will try."

B was sung, then C.

"You see what you can do by trying!" exclaimed Nozari triumphantly; "and now, my boy, I have just one thing more to say to you, and that is this: 'If you work, you will become the finest tenor of Italy!'"

Nozari was right. The erstwhile poor chorus singer was Giovanni Battista Rubini, certainly one of the greatest tenors who ever lived. His compass eventually extended upwards to at least the F above that top C, and he managed his breath so perfectly that on one occasion the great French bass, Lablache, unsuccessfully watched him for four minutes to ascertain when he took a breath. Further: Rubini's singing was so soulful that his voice was once described as having tears in it.

Rubini had the advantage of sound vocal instruction for seven years, but had it not been for the self-confidence and ambition that resulted from the meeting with Nozari, it is questionable whether he would ever have risen above mediocrity. "But," some may comment, "Rubini had the *voice*; that was the main thing!" However, I would remark that when Caruso left engineering and aimed at becoming a professional singer, Vergine (his tutor) was of opinion that his voice was insufficiently strong for that purpose, and that Verdi, who once heard the young aspirant, was even more dissatisfied with it. Caruso himself determined to succeed, but was uncertain as to whether his voice was tenor or baritone. He later remarked that at that early stage it resembled "the wind whistling through a window."

Sims Reeves wrote: "The student must remember that he has only been endowed by nature with the

material to make a beautiful instrument; he has to make the instrument himself; and it is then, and then alone, that he may sound it from top to bottom and be the complete artist." "All voices in an uncultivated state," stated the centenarian singing master, Manuel Garcia, "are more or less rough and untractable. Indeed, it has often happened that the very good qualities which judicious study has developed, have been so obscured by defects at the outset that their existence has been denied altogether. Yet the voice must be weak, harsh, or trembling to a degree scarcely imaginable before it can be reasonably abandoned as hopeless."

Sometimes "the material to make a beautiful instrument" is palpable to the genuine expert though not to the generality of "trainers" and musicians. A notable instance was Melba. When a schoolgirl she was supposed to be no singer at all, though a wonderful whistler. Later, Sir Arthur Sullivan could not find room for her in the Savoy chorus, and Alberto Randegger would not accept her as a pupil. The "discovery" of the star was made by Madame Mathilde Marchesi in Paris. After the trial song was ended, Madame Marchesi rose from her seat at the piano and, without a word to the other, walked out of the room. Concluding that this was another rebuff, Melba was moved to tears, but she almost immediately had her fears removed by the voice of Marchesi calling up the stairs to her husband: "Salvatore, Salvatore, come quickly; I have found a star!" Re-entering the room with her husband, Marchesi took Melba's hands in her own, and said: "If you are serious, and will study, I will make of you something wonderful!" Marchesi kept her promise.

Sometimes bad training nearly destroys a voice. Jenny Lind was a notable example. When little more than a child she was singing with considerable success at the opera in her native city, Stockholm. Neverthe-

less, when about twenty years of age, her voice began to show serious results of strained production, and she felt in danger of losing it altogether. She therefore went to Paris in order to get further training. The first singing master to whom she applied asked : " What is your nationality? "

" I am a Swede," she replied.

" Have you any acquaintances in your own country, friends or so? "

" I know only an old clergyman upon whose patronage I could depend."

"Is he married? Has he any children? "

" He has a son of about twenty-five, and a daughter eighteen years old."

" Well, my dear girl, all I can advise you to do is to go home to your own country and marry, if you can, that son of your clergyman, for a singer you will never be."

Jenny Lind, we are assured, never forgave that professor, for she held that he meant to deprive her of her glorious career. However, even Manuel Garcia did not at first form a favourable opinion : "Mademoiselle," said he, " you have no longer any voice." Nevertheless, after a few days' rest, she returned to Garcia, and, eventually, under his guidance, made such progress that, in his own words, she was able " to look down on her former efforts as from a mountain to a plain."

Sims Reeves wrote : " The most perfect singer I ever heard was Jenny Lind "; and Mendelssohn said of her : " I have never in my life met so refined, genuine, and true an artist's mind as that of Jenny Lind. Nowhere have I found such a combination of natural endowment, of study, and of heartfelt sympathy." Nevertheless, as we have seen, even her musical and artistic genius was not an adequate safeguard against the acquisition of incorrect voice production.

Imagination, imitation, and feeling are clearly insecure as sole guides to the vocalist. Much less are

they safe bases on which to rest attempts at voice culture. The folly, too, of relying solely on sensations as a basis of training is also apparent from the following extract from Sir Morell Mackenzie's *Hygiene of the Vocal Organs*: "Sensation which is always an untrustworthy interpreter in all that relates to the workings of our internal economy is particularly treacherous in regard to the throat. I have almost daily occasion to observe this in patients who localise with the nicest precision an uncomfortable feeling, the true cause of which is *visibly* somewhere else. It is often almost impossible to convince a person that a bone or other foreign substance which may have stuck in his throat has been removed even when he is shown the *corpus delicti*. Sensation, however," the great surgeon added (and I would emphasize this point without delay), "is a useful witness in confirming the results arrived at in other ways, and it can always be relied on when it tells whether an action causes strain or not."

Parts and capacities are developed by use; are deteriorated by disuse; and injured, and sometimes destroyed, through abuse. In dealing with organs so delicate and complex as those which comprise the vocal instrument, the dangers of haphazard "training" are as pronounced as are the advantages derivable from *genuine* voice culture. The highest medical authorities unanimously agree that wrong vocal tuition is responsible for much weakness and disease of the throat, chest, stomach, and of the constitution as a whole—it can and does induce even hernias. They as confidently regard voice cultivation conducted on sound principles as a health-giving agent of great practical value. In addition to its use in the treatment of speech and throat disorders of wide variety, its remedial influence is experienced in neurasthenia, asthma, anæmia, bronchitis, incipient pulmonary consumption, and a host of other complaints. In short, *genuine* voice culture, though not a "cure-all," is a very potent

means of recovering, retaining, and increasing health, and of improving the physique. *But the real* voice is usually *hidden* under the voice one hears. Like the diamond in the earth, it has to be *revealed*. A *properly-produced* voice is the only foundation on which the superstructure of vocal eloquence can be erected.

I cannot emphasize too strongly the fact that but for the incompetency of ordinary vocal tuition the health-giving properties of genuine voice culture would be recognised universally. As matters do stand at present, conscientious medical men in general may well be in a quandary when they feel that voice culture would benefit a sufferer. Their advice, through lack of the ability to choose knowingly, may, and not infrequently does, lead to harm through the sufferer's choice of an unsuitable teacher.

Apart from the question of health, the aims of voice culture should be :—

1. To make the vocal organs subservient to the mind, servants capable of expressing whatever is possible through the agency of voice;

2. To get from the vocal organs the best work possible, as regards both quality and quantity, *i.e.*, to get a maximum effect with a minimum expenditure of energy.

In so far as any measures fulfil those requirements, an ostensible system of voice culture can be fairly judged. Unless it proves equal to the tests imposed, you may safely decide that it is deficient from the standpoint of health. I ardently desire that this book will do something material towards placing voice culture in its deserved position as a therapeutic agent.

I hasten to concede that there is much vocal instruction that cannot be imparted without *viva-voce* instruction, combined with efficient vocal demonstration; but I believe that this book will prove to be true to its title—that it will make voice culture *easy*, not—of

course—by ridding the student of the need of work, but by giving clear directions and something tangible from which to work and test results.

When persons are being taught individually and with the teacher, the instruction given may be restricted to such as is applicable especially to the voices in question. On the other hand, when instruction is imparted by means of written matter, in order to ensure the giving of sufficient knowledge, more needs to be imparted; moreover, in order to prevent misunderstanding what is written, and the putting of ideas into wrong niches in the mind—and, in many instances, into niches that should not exist—warnings need to be given in reference to notions that have been inculcated by some teachers and writers. As an offset against the extra work that will be entailed, I can justly claim that the conscientious student of this book will learn far more than the ordinary professional vocalist knows about the voice. I shall impart what are the physical conditions of correct voice, and how to think and act in order to comply with them; and I shall also attempt to make the student see *why* what I have taught is true, and why contrary notions are incorrect. Critical reflection is what I desire on the part of readers; such reflection should be brought to bear throughout the book, and will be far more efficacious than any number of attempts made to master difficulties by wearying repetitions—indeed, it is by encouraging judicious reflection that this book makes voice culture *easy*. At all times, the thought at the back of the endeavour and the exercise is of supreme importance. Haphazard repetition is prone to be the fixing more firmly, instead of the remedying, of faults. On the other hand, sedulous repetition of the *right* establishes quickly the automatic vocal actions—the vocal *habits*—which are essential bases of true artistry.

The need of reflection is especially necessary to the student who has not the advantage of having a real

expert as a teacher (and anyone other than an expert is worse than useless), for he or she must master something *in advance* of the practice, so that the antidote will be ready at hand should a difficulty occur. Information such as this book contains will give a firm grip of the underlying principles of scientific voice culture. The physiological and the psychological are so intertwined that everything meant to be taught is—I make bold to say—really taught, application of the principles inculcated is simplified, and, since progress is continually manifest, interesting. Further, the method, which I call the "psycho-physical," is protective against sophistry and retrogression. Still further: the method has this incalculable advantage, should the student lose through neglect, enforced or otherwise, part of his skill, he knows exactly how and what to think, and how to act, in order to recover it.

The system advocated does not dispense with speech, but, on the other hand, makes spoken voice and whisper means of enhancing the culture of the voice in song. Many persons, intent upon the culture of their voices for and in song, unintentionally retard or even prevent progress inasmuch as they do not use their voices aright in speech. Surely, the rational mode of procedure is to endeavour to establish as early as possible correct tone in speech; and, conversely, the cultivation of the voice in song can be made a means of improving the voice in speech.

Considering the number of persons whose livelihood is dependent upon the employment of their voices, and sometimes for long periods at a time, it is curious that but rarely is any thought given to voice improvement—notwithstanding the sore throats and other ills that many of these persons experience after long talking. Even a cursory acquaintance with genuine voice culture must bring home to any sensible person a vivid realisation of the many advantages that attach to its enlistment as an aid to health, success, and happiness.

Among the ancient Greeks and Romans, voice culture was considered essential to every student and to health. Nowadays it is tacitly assumed to be of comparatively trifling importance to all except the few. Crude as were some of the procedures employed by the ancients, excellent results occurred in many cases. At its best, voice culture is a vastly superior thing than that practised by any of the ancients, but, unfortunately, so far as the general public is concerned, it is neglected—itself and therefore its merits unknown. Scales are sung haphazardly, under the mistaken notion that they constitute the essential part of "learning to sing," and, in many instances, diplomas are awarded to persons who have not mastered so much as the rudiments of voice culture in practice; and, under the guise of "elocution," inflections, in addition to emphasis, pause, and suchlike, are foisted upon would-be proficient speakers, all forgetful or unaware that artificiality is the very antithesis of true eloquence, and that emotional activity is essential, but, ofttimes, cannot be brought into play—the proper culture of the voice itself being ignored. As Montesquieu said : "There are two sorts of corruption; one when men do not observe the law, the other when they are corrupted by the laws—an incurable evil because it is in the very remedy itself."

"Putting the cart before the horse," is far from uncommon in tuition, and its lamentable results are conspicuously exhibited in attempted preparation for public singing and speaking. My aim is to harness the horse before the cart.

CHAPTER II

HOW VOICE CULTURE HAS EVOLVED.

"It is best to follow the footsteps of our forefathers, if they have gone before us in the right way."—CICERO.

BEFORE they learn to speak, infants evince a sense of rhythm and an appreciation of music; and wherever man is found he has a taste for song of some description. (Lower down the scale of life, the gibbon—the most upright of the anthropoid apes—can sing an octave in semitones, and even rodents—animals lower in the scale than are monkeys—produce musical tones. Independent of their own little melodies, some birds pipe tunes taught to them.) Savages, however, never sing artistically, and usually so abuse their throats that their voices early become permanently hoarse and tremulous. Even the Chinese consider a nasal drone the acme of perfection. In short, the artistic use of the voice, though the only physiologically correct employment of the vocal organs, like excellency in any other art, is the result of a gradual evolution.

ANCIENT VOICE CULTURE.

Thirty-three centuries ago there reigned in Egypt the warrior, King Rameses II (the Great), known to the Greeks, from his popular appellation, "Sestesura," as "Sesostris." He is of interest to our subject, inasmuch as we learn that during his sovereignty the Egyptian priesthood had great singing schools, each of which was presided over by a singer called "Ata," whose duty it was to conduct the sacred hymns and other temple

music. The Hebrews and Greeks accepted, improved and ennobled the Egyptian music, and from them the music of the Christian church sprung, and probably the notions of voice culture acted upon by the ancient Greeks and Romans. The Athenians divided the work among three groups of specialists. The duty of strengthening the voice and increasing its compass fell to the *vociferaii*; the improvement of quality, the rendering of it full, sonorous, and agreeable, fell to the *phonasci*; and the *vocales* taught intonation and inflection. After this triple training was completed, the student was turned over to the rhetorician.

From ancient writers something can be gleaned regarding the mode of instruction pursued. Pupils were accustomed to walk about when reciting, but not directly after a meal. Declamation, or vociferation (as they called it), was performed at first on the lower vocal tones, and gradually heightened in pitch, some care being taken to avoid straining the voice on the higher notes, or by employing excessive force. (The second precaution, however, was not always successful, for we gather that rupturing of blood vessels not uncommonly occurred during public speaking.) The upper limit of the voice having been reached, an equally gradual descent followed. Attention was also given to increase and decrease of power. (Our two signs, indicative of a *crescendo* and a *diminuendo*, are of Greek origin—forming together a rhomboid.) Throughout the speaker's career, the gradual " unfolding " (as it was called) of the voice was the first step of daily practice.

In ancient Greece and Rome, oratory sometimes attained a very high level, though—as I mentioned before—knowledge of voice culture was only elementary —as, independent of the significant lack of precision in the extant writings dealing with the subject, one Roman writer relates (in order to prove the nice discrimination exercised) that a certain orator, Caius Gracchus, had behind him when speaking to an assembly a slave,

whose duty it was to blow a tonarion (a sort of pitch-pipe) from time to time so that the speaker's voice did not inadvertently wander too far away from the given level.

Singing and musical declamation were involved in Grecian drama; and public singers were not unknown to the Romans in very early times, but these singers were in general slaves or domestic servants of the patricians. Under the late Cæsars there were undoubtedly a considerable number of famous professional singers, male and female. When, however, the influence of the Christian church was established, musicians and actors were ostracised and, consequently, vocal art eventually became absorbed by the ecclesiastical authorities.

ECCLESIASTICAL VOICE CULTURE.

As early as the first century of the Christian era, Clement, Bishop of Rome, ordained that the psalmist or precentor must intone, and the presbyters direct the choir. The first European seminary for the study of song was founded in A.D. 314 by Pope Sylvester I, another by Pope Hilary in 461. St. Nicebius made a rule that all the boys of his diocese should be instructed in song directly they could speak. St. Ambrose, too, who became Bishop of Milan in 374, did much to encourage the study of vocal music. However, the greatest impetus to the study was given by Pope Gregory the Great (590—604). He founded and amply endowed at Rome a school for young orphans to be trained as singers for the Christian churches, and he even took part personally in the giving of instruction. Indeed, he attached so much importance to the study of singing that he made an express law to the effect that no one inexpert in singing should be ordained priest. The Gregorian chants consequently became strong proselytising agents, as well as aids to the devout, and numerous singers accompanied Augustine in his mission

to this country; but to Theodore of Canterbury is due the credit of first diffusing church music of a superior order. Finally, permanent schools of music were established at the monasteries, and an especially fine one at Canterbury. King Alfred in England, and Charlemagne in France and Germany, enthusiastically and successfully fostered both vocal and instrumental music. At Rome the standard of competency increased steadily, and simultaneously the status and influence of the papal singers. Eligibility for the post of chamberlain was enjoyed by all, and the singers' president had a vote in the election of popes. No less than five popes were chosen from among the papal singers. These were: Sergius I (687), Gregory II (715), Paul I (757), Stephen III (768), and Sergius II (844).

The conditions under which candidates were admitted to the papal school evince considerable insight relative to voice. Candidates were required to possess voices conspicuous for richness, strength, brilliance, and compass, and bodies powerful and well proportioned—the chest capacious, the lungs sound and strong, the neck muscular, the dome of the mouth high, the soft palate not long, the tongue well-shaped, the lips not very thick, and the teeth complete. The authorities certainly did not believe in risking more than a remote possibility of fruitless work. However, the fortunate candidates had the advantage of from six to eight years of careful training.

During the eleventh century of the Christian era, Guido Aretino, a Benedictine monk of Arezzo in Tuscany, travelled from place to place teaching gratuitously, to rich and poor alike, his system of Solmisation or Sol-Fa. Church and secular music alike progressed in consequence. By the middle of the sixteenth century, British music had progressed far, every gentleman was expected to sing in company, and even Sir Thomas More would sometimes don a surplice and sing in the choir at Chelsea Church.

In 1535 a learned work by Andreas Ornithoparcus, a Master of Arts in Meyning University, was published at Cologne. The book contains the substance of a number of publicly-delivered lectures on music. In 1609 appeared a translation into English by John Douland, a lutenist and Bachelor of Music. The book, which I have perused in the British Museum, is entitled: "Micrologus, or Introduction : Containing the Art of Singing." Its last chapter is entitled: "Of the Divers Fashions of Singing, and of the Ten Precepts of Singing," and therein occurs the following passage: "Every man lives after his own humour; neither are all men governed by the same lawes; and divers Nations have divers fashions, and differ in habits, diet, studies, speech and song. Hence it is, that the English doe carroll; the French sing; the Spaniards weepe; the Italians, which dwell about the Coast of Janua, caper with their Voyces; the other barke; but the Germanes (which I am ashamed to utter) doe howl like wolves. Now because it is better to break friendship, than to determine anything against truth, I am forced by truth to say that which the love of my Countrey forbids me to publish. Germany nourisheth many Cantors, but few Musitians. For very few, excepting those which are or have been in the Chapels of Princes, do truely know the Art of Singing. For those Magistrates to whom this charge is given, doe appoint for the government of the Service youth Cantors, whom they choose by the shrilnesse of their Voyce, not for their cunning in the Art, thinking that God is pleased by bellowing and braying, of whom we read in Scripture that he rejoyceth more in sweetness than in noyse, more in the affection than in the voyce."

In 1537—that is, two years after Ornithoparcus' book was published in the original—the first Italian conservatorio was established. It was at Naples, and its founder, Jean de Tapia, who was desirous of perpetuating what he considered the good principles of the

chant, travelled from town to town, begging for the necessary finances. The conservatorio was subsidised by the Viceroy and the President of the Consistory. The foundation of many similar schools followed; but so long as the serious study of vocal music was confined to ecclesiastical purposes women were almost excluded therefrom, the highest parts of the music being sung by boys, or falsetti, or eunuchs. As early as 1137 a Greek eunuch named Manuel organised the study of singing at Smolensk in Russia, and in 1559 there were eunuchs in the chapel of the Duke of Bavaria. In the pontifical chapel Spanish falsetti were at first employed, but eunuchs supplanted them. In 1640 eunuchs had definitely been installed to take the principal parts in church, concert, and theatrical music; most of the celebrated singers of the eighteenth century were eunuchs; and not until the early part of the nineteenth century did the custom of consigning female parts to eunuchs become quite extinct.

The Advent of Female Singers.

About the middle of the sixteenth century, women had at least commenced to take an active part in professional singing. The celebrated diary of Sanudo describes the elaborate functions and festivities that took place in connection with the marriage of Lucrezia Borgia with Don Alfonso d'Este, Duke of Ferrara, and mentions that "the illustrious bride" assisted at musical concerts in which handsomely-paid singers, male and female, took part.

With the idea of bringing ancient tragedy into a newer form, *recitative* was introduced in place of the musical declamation of the old Greeks. On the 6th February, 1600, an opera on those lines was performed, under Jacopo Peri, in celebration of the marriage of Henry IV of France with Marie de Medicis. The Italians, loving beautiful melody, recitative was made more animated and airs were introduced. In

1645 the first Italian opera company went to Paris, and, owing to the skill of Lully, a Florentine, the style so suited French taste that it held the Parisian stage under him and his pupil Rameau, a nephew of Diderot, for over a century.

ZENITH OF THE OLD ITALIAN SCHOOL.

In Italy, the growth of the florid style in opera, and the cultivation of the voice to meet its requirements, grew hand in hand. Francesco Pistocchi (born 1659) and Antonio Bernacchi (1690-1751) each founded a singing school at Bologna. Alessandro Scarlatti (1649-1725) founded a Neapolitan school, Leo and Feo had schools at Naples, and Peli at Milan. Pier Francesco Tosi taught in London, and Mancini (Jean Baptiste) in Vienna; and each wrote a famous book on singing.

Bernacchi taught Mancini; and Mancini and Scarlatti taught Nicolo Porpora (1689-1767). Porpora was born at Naples, but went to Poland and there spent a number of years in the service of its king, Augustus. Afterwards he resided at various German courts, and then in the principal Italian cities. He composed about fifty operas, oratorios, masses, etc., taught at Venice, Vienna, London, and Naples, and trained many famous singers, including Farinelli and Caffarelli. Domenico Corri, who boarded with Porpora five years, taught in Edinburgh and London, and wrote *The Singers' Preceptor*. Joseph Haydn, the great composer, when a youth, was glad to be a menial of Porpora for the sake of lessons from him. We are assured that Porpora's pupils, whether princesses or professors, were proud to own the crusty old man as their master; nevertheless, the last few years of his life were embittered by neglect and poverty, and when, at over eighty years of age, the great master died in his native town, a subscription was raised among the local musicians to defray the expenses of his burial.

Of the singers of those days, much that is interesting has been recorded. On the whole they mainly excelled in technique, but there were nevertheless some truly great artistes among them. Baldasar Ferri (1610-1680), a eunuch, was perhaps best of all. Jean Jaques Rousseau, in his *Dictionnaire de Musique,* wrote of him that his voice "appears to have been the most extended, the most flexible, the sweetest, the most harmonious that has ever existed." According to Mancini and Rousseau, he could sing a chain of shakes two octaves in length up and down, trilling on every semitone, in one breath and in exact tune. "The unanimity of all his contemporaries shows," wrote Rousseau, "that talents so perfect and so rare were even above envy. Nothing, say they, could express the éclat of his voice, and the graces of his singing: he had, in the highest degree, all the characteristics of perfection in all its forms; he was gay, proud, grave, tender, at will, and every heart was melted by his pathos."

Another eunuch who was a great singer and yet possessed of true humility was Farinelli. Some of the passages he sang in one breath contained upwards of three hundred notes, irrespective of trills; but when twenty-six years of age and on his third visit to Vienna, he was bluntly told by the Emperor, Charles VI: "Those gigantic strides, those never-ending notes and passages, [illegible]ly surprise, and it is now time for you to *please.* [illegible]ou are too lavish of the gifts with which Natur[illegible]as endowed you; if you wish to reach the heart, you [illegible]ust take a more plain and simple road." Farinelli set to work to form a better style, and with such success that, Choron relates, he thereafter "united pathos to spirit, simplicity with the sublime, and by those means delighted, as well as astonished, every hearer."

Of probably equal merit as an artiste, but of marked difference where modesty was concerned, was Caffarelli, another eunuch. Of him David Garrick

wrote from Italy : " He pleased me more than all the singers I ever heard. He touched me; and it was the first time I have been touched since I came to Italy."

Farinelli, Caffarelli, and probably the majority of singers of that period, had six years' training. Porpora, we are told, kept Caffarelli six years practising the diatonic and chromatic scales, ascending and descending; the various intervals; and shakes, appoggiature, and various passages of vocalisation, all of which were written out on a single sheet of paper. In the sixth year were added lessons in articulation, pronunciation, and declamation; but at the end of that year Porpora astonished Caffarelli by saying to him : " Go, my son, you have nothing more to learn; you are the first singer of Italy and of the world." Whether the remark was meant, or was spoken ironically, the anecdote emphasizes the paramount importance of properly-framed exercises.

Caffarelli excelled in slow and pathetic, as well as in florid music, and is said to have been the first to introduce chromatic scales as an embellishment of quick music. Of Farinelli, Dr. Burney wrote : " It seems as if the composers of those times were unable to invent passages sufficiently difficult to display his power, or the orchestras to accompany him in many of those which have been composed for his peculiar talent." Later, in the same work, Burney stated : " It seems to be with musical effects as with medicinal, which are enfeebled and diminished by constant use. Indeed, such execution as many of Farinelli's songs contain, and which excited such astonishment in 1734, would be hardly thought sufficiently brilliant in 1788 for a third-rate singer at the opera. The dose of difficulties to produce the same effects as fifty years ago must be more than doubled. But every excellence in music, when it has been pursued to excess, is thrown aside to lie fallow till forgotten; and, after a series of years, like a fashion in apparel, it is started again as a new invention."

The assertion is sometimes made that little is actually known concerning the procedures employed by the old Italian masters, for instruction being given merely verbally, alterations and inaccuracies doubtless crept it—as is unavoidable with tradition. That representation is only partially true and is very misleading. From the collection of old works in my possession, to say nothing of my researches in various great public libraries, I can readily demonstrate that there was by no means complete agreement amongst the old Italian masters on various matters of far from trifling importance; but I can also trace the gradual growth of the fundamental principles that underlay the tuition given by Porpora, and, further, I can trace the harmful deviations therefrom that have occurred since, and which, in some cases, have nevertheless been ascribed to the Old Italian School. Sir Henry Wood once declared publicly that the old Italians "founded their methods upon nature," and that the elements propounded "were simple, yet perfectly scientific." So far as the fundamental principles to which I have referred extend, they certainly merit that description.

Stagnation.

By means of long experimentation, the exercise of common sense, a keen appreciation of the beautiful in sound, and the advantage of a language singularly suitable for song, the old Italians achieved much. The position when their School had reached its zenith was thus summed up by J. J. Rousseau in 1767 : "There has been composed an art of singing, that is, observations on those voices which sung the best; rules have been composed for facilitating and improving the use of this natural endowment, but there remain many discoveries to be made regarding the easiest, shortest, and surest manner of acquiring that art."

The progress recognised by Rousseau was unfortunately not known to what formed the vast majority

of musicians. Whatever examples of excellence they had before them were ascribed to natural endowment, musical feeling, and practice. Thus we find Sir John Hawkins stating in his *History of Music*, published in 1766 : " Formerly there were in London many masters who taught the practice of singing by the syllables " (Do, Re, etc.). " The profession is alluded to in some of the comedies written about the time of Charles II. But singing follows so naturally, the smallest degree of proficiency on any instrument, that the learning of both is unnecessary; and, in fact, those that teach the harpsichord are now the only singing masters that we know of except a few illiterate professors, who travel about the country and teach psalmody by the notes at such rates as the lower sort of people are able to pay."

Richard Mackenzie Bacon, in his *Elements of Vocal Science*, published in 1824, stated : " The Italians are the only people who have cultivated vocal science with pre-eminent success. From them are deduced the few principles that are established in other countries."

One often sees advertisements stating that their inserters teach " the Italian Method," or " the Italian *bel canto* method." Those terms may have some monetary value, but they are otherwise meaningless. The procedures of the Old Italian School are employed as much out of Italy as in it; and in Italy teachers are good, bad, and indifferent—as elsewhere. Italy was looked upon as the home of the fine arts. The Italians were the spoilt children of the world of song, and, through resting on their laurels, they lost their high position artistically. They are not now a particularly romantic people, and rather tend to excel in engineering and other occupations of a similar character.

PSEUDO-SCIENCE.

In the eighteenth century the *art* of voice culture had far outstripped the *science*. Such science as existed was considerably adulterated. The one advantage was

that anatomists rather attempted to show why this and that procedure was right, than to dogmatise on vocal art. Since then, however, various anatomists (though themselves ill-voiced) have attempted, for theoretical reasons, to correct the empirical methods that had been of proved utility. These anatomists should have reflected that voice culture cannot safely be based on the examination of corpses. Voice can be produced in many different ways, and the correct combination of actions for artistic voice can hardly be discovered through dissection. The attempt has led to the promulgation of much error and of almost infinite confusion, altogether contrary opinions having been spread broadcast.

The invention of the laryngoscope was valuable from the medical standpoint; but, although it has helped to establish some truths relating to voice culture, its misuse has often led to error.

As regards acoustics, the experiments of Helmholtz and various others cannot form a secure basis of vocal training. The voices of the persons used for experimental purposes, and the use or abuse of those voices, are vital factors, and the persons employed in some instances were far from efficient vocalists.

Elementary Experiment Unneeded.

In past centuries, whilst the art of voice culture was in course of evolution, disastrous experimentation must frequently have been made with singers and speakers; but, fortunately, there is neither need nor adequate excuse for risking it nowadays. Besides, an experimenter unaided by a knowledge of what has already been accomplished, may, perhaps, find out something useful, but—from the art standpoint—nothing new to experts. "All I claim for science," wrote Sir Morell Mackenzie, "is the right of veto against methods which are physically hurtful."

"KNOWLEDGE IS POWER."

Some singers and teachers have asserted that knowledge of the vocal organs is hurtful—liable to make pupils nervous. But, surely, here as elsewhere, Lord Bacon's quoted aphorism holds good: What *really hurts is spurious* science. Ideas do not lie isolated in one's mind; the mere attempt to grasp them establishes connections, and every conscientious student strives to trace relationships among the facts or supposed facts presented. Occasionally students early see glaring inconsistencies in what are presented as "facts." Usually, however, students only succeed in getting an entirely erroneous conception of the vocal organs in action, and it may be, by conscientious, but mistaken endeavours, defeat themselves. Nevertheless, a theory may be fictitious, but the modes of thought engendered, or some of them, may be rather helpful; indeed, I hasten to admit that, even in the palmy days of Italian artistry, lack of knowledge involved loss of time, and, I doubt not, led to failure in some instances.

Voice culture is an art; but, by the utilisation of science, results can be rendered surer and time is saved. I know that in my own case the information contained in this book would have proved an incalculable saver of the time involved. Coué wrote that my "analytical faculty" was "evidenced in all my work," and that it was "that characteristic, coupled with" my "determination to become a better and better voice culturist, that caused" me "to delve into all sciences having a bearing upon" my "art." However that may have been, I unhesitatingly assert that though sound tuition was *essential* as a basis, the investigations I have since made, and the wide application of the knowledge derived therefrom, have enabled me to get results, in others and in myself, that would have been scarcely attainable otherwise.

CHAPTER III

THE LARYNX AND ACCESSORY PARTS.

"Stay awhile, that we may make an end the sooner."—OLD ENGLISH PROVERB.

ACOUSTICAL FACTS.

Apart from the sense of hearing, sound has no existence. Hearing is a sensation or perception, sometimes arising from an internal cause—for example, from high blood pressure. Usually, however, hearing is a consequence of air or water vibrations, of suitable frequency, striking the drum of the ear, and effects derivable therefrom being transmitted to the corresponding brain centre.

Some sounds are musical; others are mere noises. If musical, the vibrations from which they arise are regular and continuous. Height or pitch depends on the *rate*, or frequency, and loudness or intensity on the *amplitude* or size, of vibrations.

The vibrations of a pitchfork are communicated to the object against which its foot is placed, that object is thrown into corresponding vibrations, and the air around into increased pulsation. This reinforcement of the original tone is called "resonance."

THE COMPLEXITY OF VOICE.

The human organs which produce voice have been compared to various artificial instruments, but, in reality, the vocal instrument is very unlike any and every other. Its form is very complex, and is capable

of almost infinite modifications. Moreover (in the words of John Hullah) "the instrumental performer has merely to play; the vocal performer has not merely to play, but to *say*—and both at the same time."

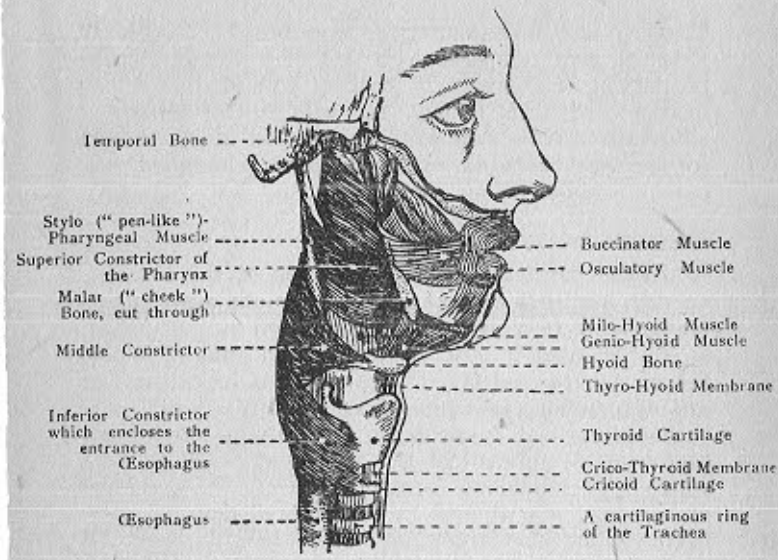
Experiments during life and after death afford definite proofs that voice is orginated in the larynx—part of which has been playfully called "Adam's apple"—and by the vibration of the so-called true vocal cords through interruption by them of outgoing breath.

Above the larynx, the voice undergoes much alteration of tone in consequence of the shape and structure, and modifications, of the parts above the point of origin. For the production of voice, and still more for articulation, a large number of muscular movements need to be co-ordinated. In every case voice is associated with such nerve changes as bring into action the muscles employed.

Throughout the organism, every muscle or group of muscles is balanced by another muscle or group of muscles; contraction and shortening infer corresponding stretching and lengthening. For example, when an arm is bent at the elbow, the biceps (on the front of the arm) is shortened, whereas the triceps (on the back of the arm) is elongated. This tonicity or balancing of muscular action tends to prevent jerky, spasmodic movement. It can be illustrated by pressing the palm of each hand against the other whilst stationary and whilst in movement. The principle involved is of supreme importance in voice culture and profoundly affects voice *control*.

THE TRACHEA.

There are two main passages down the throat, *viz.*, the *æsophagus* or gullet, down which one's food passes to the stomach, and the *trachea* or windpipe, through which breath passes to and from the lungs.



The trachea and the bronchial tubes, to which it leads, are mainly composed of cartilage at the front and sides, but of muscle and membrane at the back. By this construction the trachea is protected against injuries from outside pressure, and allowance is made for expansion of the gullet—which lies immediately behind the trachea and is usually in a collapsed condition. Another advantage of the construction of the trachea is that it allows of stretching and shortening in accordance with the position in which the head is held.

Immediately above the trachea is a complete ring of cartilage—the *cricoid*, the lowest part of the skeleton, or framework, of the larynx.

LARYNGEAL MEASUREMENTS.

In a full-grown man the larynx is about two-and-a-quarter inches long—*i.e.*, from front to back—and at

least two-and-three-quarters or more broad. That of an ordinary man compared with that of a woman has the proportion of about seven to five, with that of a boy near puberty three to two, and with that of a baby of either sex a little over four to one. In adult eunuchs (or *castrati*) who were eunuchs from childhood, the larynx is about the size of a woman's.

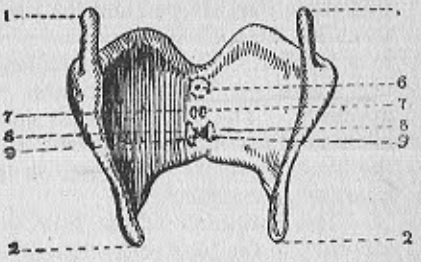
SKELETON OF THE LARYNX.

Some cartilages are described as of the "true" variety, and such become quite bony in old age. Others are unlikely to ossify and are described as "spongy" or "reticulated." The thyroid, cricoid, and arytænoid are of the true variety; the epiglottis is reticulated, as are also minor cartilages—those of "Wrisberg" and "Santorini." The cartilages of Santorini are merely prolongations upward of the arytænoid cartilages with which they sometimes form one piece. The cartilages of Wrisberg are situated in the folds of mucous membrane within the larynx and serve to give a certain amount of firmness to the structure—much as whalebone does to clothing.

The *thyroid* cartilage is easily recognisable in the average adult male, the projecting angle being the part termed "Adam's apple." The cartilage derives its name from its resemblance in shape to a shield, "thyreos" being the Greek for "shield." The right and left alæ, or wings, of which it is composed, were separate before birth : their union leave a ridge. At the top and bottom of the thyroid cartilage are two pairs of projections, the cornua or horns. The upper pair of horns are connected by ligaments with a little bone under the chin, which bone is sometimes called the "tongue-bone" and sometimes, from its similarity in shape to the Greek letter "U," the "hyoid," or "U-like" bone. The hyoid bone and also the space between it and the thyroid cartilage, can be felt with one's fingers. By means of its lower horns the thyroid

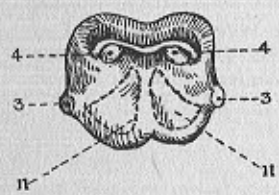
EPIGLOTTIS

(Back view)



THYROID CARTILAGE

(Back view)



CRICOID CARTILAGE

(Back view)

ARYTÆNOID CARTILAGES

(Back view)

1, 1—Upper Horns. 2, 2—Lower Horns. 3, 3—Facets for Lower Horns. 4, 4—Facets for Arytænoid Cartilages. 5, 5—Bases of Arytænoid Cartilages. 6—Attachment of Epiglottis. 7, 7—Attachments of the False Vocal Cords (Ventricular Bands). 8, 8—Attachments of the True Vocal Cords. 9, 9—Attachments of Thyro-Arytænoid Muscles. 10, 10—Attachments of the Posterior and Lateral Crico-Arytænoid Muscles. 11, 11—Attachments of the Posterior Crico-Arytænoid Muscles. 12—Attachments of the True Vocal Cords.

cartilage is hinged on to smooth facets on the sides of the *cricoid* cartilage.

The word *cricoid* is derived from the Greek word "krikos," meaning a ring, the cartilage resembling in shape a signet ring. The thick side is at the back, and

it is there that are perched the two arytænoid cartilages, so-called from their resemblance, when taken together, to a pitcher. They are sometimes called "the regulating cartilages," for a reason which will soon be apparent. The tissues which connect the cricoid and arytænoid cartilages are elastic in character and permit the latter to rotate somewhat on the sockets into which a corner of each fits.

The *epiglottis* is the little projection of cartilage attached to the base of the tongue and shaped somewhat like a cycle saddle. With us it is usually erect, but in the Chinese and some other orientals it is curled and pendant over the larynx. When we swallow, the epiglottis falls, and the larynx is raised; thus the aperture is closed, preventing one's food from "going the wrong way," *i.e.*, down the windpipe instead of the gullet. The epiglottis also acts (as will be shown later) as a directive of the vocal sound-waves.

"Epiglottis" means "upon the glottis."

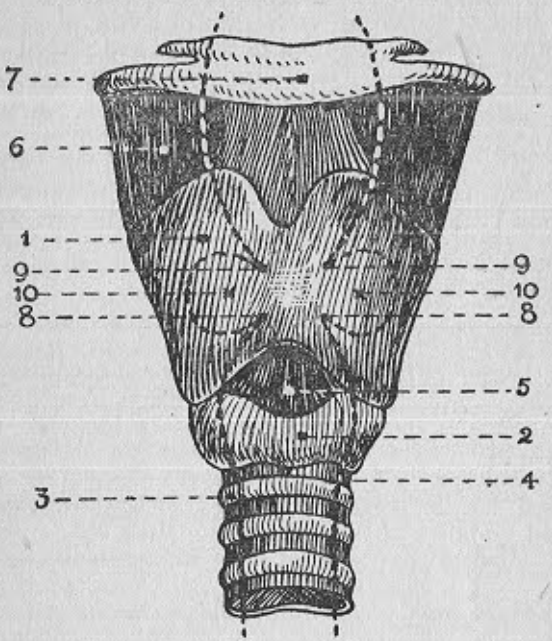
THE GLOTTIS.

In ordinary breathing, air passes freely through the larynx, but at two parts a closure can be made by the approach of the so-called "vocal cords." One pair of cords, called "false," points downward, and is connected with the holding and compression of the breath. The other ones, the "true" vocal cords, points upward and are the generators of voice.

Both pairs of cords pass backward from behind "Adam's apple" to the arytænoid cartilages. Each *false* cord is attached to a rough elevation on the front surface of the arytænoid cartilage of the same side: each *true* cord to a corresponding anterior arytænoid projection.

The term "glottis" is usually applied to the space at the true vocal cords, but may also include the passage at the false cords. The boundaries of the glottis are called its "rim" or "lips." They are partly

Front view of Larynx and Adjacent Parts.



1—Thyroid Cartilage. 2—Cricoid Cartilage. 3—An ordinary cartilaginous ring of the Trachea. 4—Portion of the Tracheal Membrane. 5—Crico-Thyroid Membrane, covering the Crico-Thyroid Space. 6—Thyro-Hyoid Membrane. 7—Hyoid Bone. 8, 8—True Vocal Cords. 9, 9—False Vocal Cords (Ventricular Bands). 10, 10—Ventricles of Morgagni. The dotted lines indicate, roughly, what would be the shape of the cut edges by the open air-passage were a vertical section, from side to side, made of the whole.

ligamentous, partly (due to the arytænoids) cartilaginous. The word "glottis" is derived from a Greek word signifying "the tongue," and was applied by the ancients to certain appurtenances of a flute, apparently like reeds, which were put to the lips and played upon by the breath. "The flutes," we are told, "could scarcely be made to speak without it."

The *true* vocal cords consist of fibrous elastic tissue covered by a membrane like that coating the inside of the lips—which is here so thin that the cords may be seen shining through it. As inspected by the aid of a laryngeal mirror, they usually appear pearly white—though in some healthy throats, and in all inflamed ones, they appear pinkish or even red.

THE CORDS IN VIBRATION.

During ordinary breathing the vocal cords diverge as they approach the arytænoid cartilages; consequently the glottis is then lozenge-shaped, but irregular, two-thirds being formed by the cords and only one-third by the cartilages. When we *whisper*, the glottis is not quite closed, but the breath in passing is sufficient to cause a slight vibration of the true cords. Much air, however, is allowed to pass between them without being thrown into audible, musical vibration. A closer approximation of the cords occurs during the production of normal voice, and other changes occur of which mention will be made later in this work.

In 1693, Ferrein made definite acoustic experiments on the larynx. He thought that the vocal cords resembled a pair of strings set in motion by the stream of air—which he compared to a violin bow. The cords, he observed, were shortened and stretched in a manner analogous to the strings, and it was he who coined the term "vocal *cords*."

The muscular movements performed within the larynx are numerous. There are ordinary normal actions, and there are also *freak* actions. Just as else-

where in the organism, these are assisted, and indeed prompted, by peculiarities of structure, not only of the cartilages, muscles, and ligaments, but also of the nerves and brain.

At the commencement of my book, *The Cure of Stammering, Stuttering, and other Functional Speech Disorders*, I mentioned a Mr. Strathie Mackay, who, several years ago, visited me in order to demonstrate his ability to sing two notes simultaneously. The notion, expressed by some medical men, that he sang alone a tenor and baritone duet was not substantiated in my hearing, but he did succeed in singing a melody and accompanying it with a sort of bad seconds. His larynx bore, exteriorly and interiorly, a normal appearance; and I was sufficiently interested in his achievement to institute a series of tests to ascertain whether dual voice is a potential capability of normal throats. Results sufficed to convince me that it is.

Placed alongside the fact that MacMahon and others have succeeded in attempts to restore voice of a sort in persons who had lost a vocal cord through operation for the removal of cancer, the explanation is that the usually advanced theory that voice is necessarily the result of the liberation of air in extremely rapid puffs between tensed vocal cords is unreliable. Obviously, the vibration of a single cord can be sufficient to produce voice, and each of the cords normally sets up musical vibrations. That, indeed, is the explanation of the oscillation (not vibrato) that is a feature of very resonant voices, which oscillation becomes apparent when powerful tone is produced. The vibrations of each cord do not synchronise exactly. The truth of that explanation is apparent by slowing down a strongly amplified gramophone record of an oscillating voice. The effect is comparable to the *vox celeste* of a church organ; the oscillation in which instance is brought about by two sets of pipes just out of tune with each other.

The vocal cords are essential to voice, but the rate and amplitude of their vibrations are influenced by other parts and the temporary conditions of those parts. For example, vocal cords separated from the body cannot yield sounds such as they yielded or originated when they were in use as part of the body. Independent of reinforcing parts and cavities, the fact must be taken into account that the tissues lose by death a considerable portion of their elasticity.

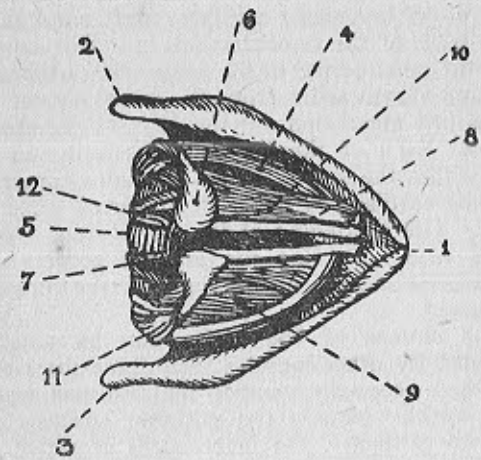
INTRINSIC AND EXTRINSIC LARYNGEAL MUSCLES.

It has been computed that the muscles of the larynx are capable of upwards of sixteen thousand single and combined movements. Only such movements as have a particular bearing upon voice culture will be dealt with here, and even then only the main muscles involved will be mentioned—often other muscles hold a subordinate position in the matter. Further: larynxes differ in structure as much as do noses, and the attachments of muscles are not always solely where expected; indeed, occasionally some of the fibres extend to different cartilages than do the vast majority. Throughout, therefore, my descriptions should be looked upon as general.

Certain of the laryngeal muscles are termed "*intrinsic*," others "*extrinsic*." The intrinsic muscles are exclusively concerned with the movement of one part of the larynx in relation to another, and both attachments are upon or within the larynx. The extrinsic laryngeal muscles are attached at one end only to the larynx and at the other end elsewhere. There are also certain other muscles which, though not attached to the larynx, through their action upon other parts affect it indirectly.

The points of attachment of the laryngeal muscles are indicated by the names used, *e.g.*, the crico-thyroid muscle is attached to the cricoid and thyroid cartilages.

View of part of the Larynx, from above.



1—Salient angle of the Thyroid Cartilage. 2 and 3—Upper Cornuæ. 4 and 5—Cricoid Cartilage. 6—Arytænoid Cartilage. 7—Posterior Arytænoid Muscle (cut away are the Arytæno-Epiglottidean Muscles, which cross the Posterior Arytænoid Muscle transversely, ending above in the Epiglottidean Folds). 8—True Vocal Cords. 9—Right Lateral Crico-Arytænoid Muscle (the left being cut away). 10—Left Posterior Thyro-Arytænoid Muscle (the right being cut away). 11—Crico-Arytænoid Muscle. 12—Crico-Arytænoid Ligaments.

Sometimes the information is more explicit—*e.g.*, the word "lateral," or "posterior," may be employed.

OPENING AND CLOSING OF THE GLOTTIS.

Two pairs of muscles are particularly associated with these movements, which necessitate rotation of the arytænoid cartilages. When the glottis is open to its fullest extent, there is a shortening of the *posterior crico-*

arytænoid muscles, each of which extends from the outer corner of an arytænoid cartilage, and round the edge to the back of the cricoid cartilage. This movement brings the outer corner of the arytænoid cartilage backward and downward. Opposite in movement to the muscles just mentioned are the *lateral crico-arytænoid* muscles. Each of these extends forward and downward, within the larynx, from the outer corner of an arytænoid cartilage to the front or narrow edge of the cricoid. The shortening of the *lateral* crico-arytænoid muscles tends to bring the anterior corners of the arytænoid cartilages, and consequently the vocal cords, into contact.

The closure of the glottis can be assisted or augmented by other muscles than those described. I should here especially mention the *posterior arytænoid* muscle which connects the posterior surfaces of the arytænoid cartilages, the inner edges of which it can pull closer together.

It should be noted with regard to the vocal cords that the approximation of them concerned with voice is not merely a horizontal rotation, but a slight elevation, which is essential to making the borders of the (true) vocal cords parallel to each other.

STRETCHING AND RELAXING OF THE CORDS.

Alongside the vocal cords and forming part of the lower transverse partition are the *thyro-arytænoid* muscles, the shortening of which must obviously relax the cords. The *stretching* of the cords is brought about by shortening of the *crico-thyroid,* triangular muscles, by which the cricoid cartilage can be pulled upward, upon its hinge, until the space between the front of the cricoid and thyroid cartilages is closed.

OTHER INTRINSIC LARYNGEAL MUSCLES.

The epiglottis can be pulled downward, and its folds approximated by shortening of the *aryteno-epiglottidean*

muscles, two muscles which cross each other, one passing from the right side of the epiglottis to the left arytænoid cartilage, and the other from the left side of the epiglottis to the right arytænoid cartilage.

Mention must here be made of the muscle of the false vocal cords, with which I shall deal in treating of "the valvular action of the larynx."

POSITIONS OF THE LARYNX.

Two strong muscles, called the *sterno-thyroid*, extend in broad bands from the sternum, or breastbone, to the wings of the thyroid. Shortening of these muscles pulls the larynx bodily downward.

Opposite to them in action are the *thyro-hyoid* muscles, which extend in straight lines from the thyroid cartilage to the hyoid bone. Shortening of these muscles moves the larynx upward, provided the hyoid bone be held steady. There is a complicated system of muscles passing from the hyoid bone to the tongue, sides of the mouth, upper portion of the pharynx (about to be described), and the cranium. These muscles are balanced in action, however, by the *sterno-hyoid* muscles—shortening of which pulls the hyoid bone downward—and the *omo-hyoid* muscles which connect the hyoid bone with the shoulders.

The hyoid bone helps to keep the tube open above the larynx.

THE PHARYNX AND ITS CONSTRICTORS.

The pharynx is the cavity immediately above the larynx and œsophagus. It extends to the base of the skull and opens into the mouth. From it there are two passages, the *posterior nares*, into the nose.

Among the muscles by which the pharynx can be altered in shape are the *Superior*, *Middle*, and *Inferior Constrictors*.

As the pitch of the voice is raised the constrictors can gradually contract the pharynx, thus lessening the thickness of the tube in accordance with the requirements of resonance—much as with organ pipes.

In the performance of the duty mentioned, another is attended to. Some of the fibres of the inferior constrictors being attached to the extreme outer edges of the wings of the thyroid cartilage, when lessening the diameter of the pharynx, they also bring the posterior portions of the thyroid cartilage nearer together, thus helping in the closure, and eventually in the shortening of the vibrating portion, of the true cords.

THE VOCAL SOUNDING BOARD.

This, the hard palate, or dome of the mouth, is admirably formed and placed for reinforcing purposes. It is arched from side to side by four comparatively thin plates of bone joined together by serrated edges in two lines, one running from front to back along the crown of the arch, and the other from side to side over the crown to the opposite gums. As will readily be seen, this construction endows the roof of the mouth with elasticity. Moreover, the structure of the bones referred to is what is called "ethmoid," meaning honeycombed or cellular, and resembles the highly-seasoned and desiccated wood used for the sounding boards of pianofortes.

BACK PARTS OF THE MOUTH.

From the hinder part of the hard palate hangs the muscular *soft palate*, or *veil of the palate*, which appears somewhat like a curtain over the back portion of the tongue. The soft palate has a small appendage called the "uvula" from its fancied resemblance to a grape.

On each side of the mouth are two ridges of muscles. These ridges diverge from each other in a downward direction, like the letter V reversed (Λ), and are connected with the soft palate, which they at

times appear, but only appear, to support, thus gaining for themselves the appellation, "pillars of the fauces," or false pillars. Between them, on each side of the mouth, lies a *tonsil*. The tonsils are two purply glands, hardly discernible when in a healthy condition, but liable to become so enlarged through disease as seriously to interfere with voice, speech, and even respiration.

THE NASAL AND CRANIAL CAVITIES.

The roof of the mouth is the floor of the nasal cavities, which cavities are connected with the upper pharynx, through the eustachian tubes with the ears, and with the cranial cavities through very small openings. These cavities (termed "sinuses") assist in the balancing of the head upon the spinal column and also form part of the apparatus by which voice is amplified.

REINFORCEMENT OF VOICE.

Sound is transmitted, but, nevertheless, it can be *projected*, as is evidenced by megaphones. An important influencer of the projection of the vocal sound-waves is the epiglottis. By means of that cartilage the voice is directed against the back of the pharynx, from whence, if there be no obstruction, it is reflected, under the variable arch of the soft palate, against the hard palate. As the movements of the epiglottis co-ordinate with those of the larynx, the lower the position of the larynx in the throat, the more backward is the impact of the voice upon the roof of the mouth, and the higher the larynx the more forward is the impact.

To get the best results from the resonating surfaces and cavities the soft palate has to be raised, for otherwise a nasal twang is present. Such twang should be carefully distinguished from nasal resonance, which is a result of the voice being caused to impinge well up on the hard palate, thereby causing vibration of the air in the nasal cavities. Indeed, when the voice impinges

directly upon the hard palate a wonderful reinforcement of tone results. The dome of the mouth is so shaped that the vibrating air is compressed by the onflowing breath. This is especially the case when the dome is high, and there is a pronounced ascent of the hard palate to the front. One result of the compression referred to is that the vocalised breath, on its escape from the mouth, expands by virtue of its elasticity, thus increasing the volume and carrying character of the voice. Further, the air in the nasal cavities is caused to vibrate, and the vibrations are extended to the cranial bones and sinuses, to the spinal column, to every other part of the body, and to the floor upon which the singer or speaker stands, much as with a tuning fork; and, the extent of reinforcement of the sound of a tuning fork depending largely upon the nature of the material against which its foot is placed, palpably the voice user should endeavour to stand upon an acoustically favourable material.

The fact should ever be borne in mind, however, that vocal tone may be "produced" correctly or otherwise, and, as will be shown, the primary distinction as regards tone lies in the larynx. Above the larynx the voice always undergoes much modification by the requisition of reinforcing cavities; but, reinforcing a well-produced note is very different from reinforcing a wrongly-produced one. If the sound be incorrectly produced at the organ of sound, no arrangement of cavities can put it right; indeed, the chain of results mentioned as regard resonance cannot be requisitioned in their entirety unless the voice be produced correctly. The securing of right conditions at the larynx is therefore of primary importance.

CHAPTER IV

THE VALVULAR ACTION OF THE LARYNX.

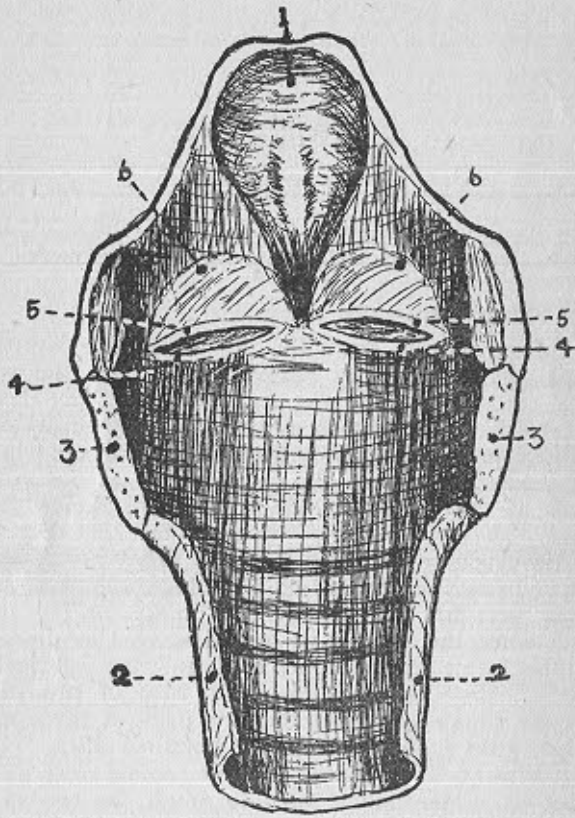
"All action is attended by its corresponding reaction, equal in force, and opposed in direction."—SIR ISAAC NEWTON.

THE FALSE CORDS AND VENTRICLES.

When looking down the throat with the laryngoscope, during ordinary breathing, one sees the true vocal cords, usually shining pearly white. Above them, and a little wider apart everywhere but at their anterior portions, can be seen the upper pair of cords, not white, but reddish in colour—like the ordinary mucous membrane of the throat. These upper cords derive their name, "*false* vocal cords," from the fact that they are not the originators of ordinary voice. They nevertheless can be caused to produce voice during inspiration, and (some say) are occasionally substituted for the true cords when the latter have been destroyed by disease. Another name for the upper cords is "the ventricular bands," they forming the upper rims of two little recesses situated between the two pairs of cords and called, after a physiologist who described them, "the Ventricles of Morgagni." In some throats these ventricles are wide enough open to admit the end of a finger, whilst in others they are mere slits.

Opening out from the ventricles are little pockets, usually extending to the upper border of the thyroid cartilage—and sometimes still higher, a fact of interest in connection with the laryngeal pouches of anthropoid apes. In a state of health, and provided the voice be correctly used, the pouches supply us with the lubricant

Human Larynx, cut open from behind and spread outwards, exposing the interior—on tension.



1—Epiglottis. 2—Trachea. 3—Cut edges of Cricoid Cartilage. 4—True Vocal Cords. 5—False Vocal Cords. 6—Ventricular Pouches.

N.B.—Especially in connection with this chapter, and to some extent with the third also, dissection of pigs' larynxes, the employment of a motor or cycle pump, or better still a vacuum cleaner (reversed in action), introduced into the trachea, and varied manipulations, can be instructive. The use of the false cords, ventricles and pouches becomes very evident.

by which the vocal cords are kept in a state of moisture. The vocal cords themselves have no mucous glands.

GALEN'S ACUMEN.

By means of the laryngoscope one is able to verify a vitally important discovery made by Galen, a philosopher, mathematician, and physician, who died in A.D. 193, and had written on the voice an entire work of which fragments (preserved in the writings of another physician, Oribasius, A.D. 360) alone remain. Hippocrates, who was born in B.C. 460, knew the larynx, but did not connect it with voice; he stated that breath, "which mostly accumulates in the cavities, in rushing outwards through the vacant spaces, makes a noise, for the head resounds." Aristotle, B.C. 384, did recognise that voice is originated by obstruction to outgoing air. Galen, however, knew the position and action of the laryngeal muscles, which muscles he enumerated almost completely and divided into intrinsic and extrinsic. He knew that the skeleton of the larynx is composed of cartilages, but thought the arytænoid cartilages to be a single piece. The uvula, he said, considerably influences the power and beauty of the voice, but "in the interior of the larynx is a body which resembles no other part of the animal structure, and is very similar to the tongue of a flute" (a Greek, double-tongued flute, he meant), "especially when regarded from above. This is the first and most important organ of voice, for in order that the animal may emit sound, a narrowing of the laryngeal channel is essential, and such is the office of this part, which I therefore call the *glottis*, or tongue of the larynx." Galen proceeded to write about "the body of the glottis," by which he meant (wrote Dr. Gordon Holmes, who unearthed the passage in 1879) "the vocal and ventricular bands of both sides, with the ventricles between them."

"But this body of the glottis," wrote Galen, "is not only necessary to the organ of voice, but also to what is called holding the breath, to which action the nature of the aforesaid glottis contributes not a little, for to effect the said purpose the parts of it to the right and left approach, so as to fall together accurately, and close the passage. But should a small portion be left unclosed, not even this, as being unforeseen, has been disregarded by Nature, who has worked an opening on each side of the glottis, and placed in continuity with the aperture a cavity within by no means small. When, therefore, the air, making use of a wide channel, goes into the animal and passes out again, none of it is turned aside into the cavity. When, however, the passage out is blocked, the air, being confined in a narrow space, is diverted forcibly towards the sides, and opens the mouth of the aperture of the glottis, which hitherto has been closed by the folding together of the lips. The cavities in the glottis of the larynx, being thus filled with wind, it is, of course, necessary that the swelling so produced should bulge towards the passage of the breath, and shut it with exactitude, even if a small part had previously been left open."

THE MODERN RE-DISCOVERY AND CORROBORATION.

In 1865 Dr. John Wyllie made known the results of much experimentation by himself relative to the ventricular bands and adjacent parts. He summed up his main conclusion thus: "There is within the larynx a double valve which is capable of controlling both the exit and entrance of air. The plan found so commonly throughout the body in such structures, in the aortic" (in the heart) "and ileo-cœcal orifices" (in the intestines), "and in the course of the veins, holds good here likewise."

Sir Lauder Brunton and Dr. Theodore Cash confirmed the investigations of Dr. Wyllie, and extended the argument further. "If," they wrote, "the view

that the functions of the false cords or ventricular bands is to close the glottis during effort, and thus to fix the thorax is correct, we should expect them to be very strongly developed in those animals whose habits render such fixation likely to be serviceable; on the other hand, we should expect them to be absent in those animals in which fixation of the thorax would be of little or no service: and this seems to be actually the case."

Now, by means of the laryngoscope, one can see that when the breath is held the ventricular bands come together, thus hiding the vocal cords, and, to a greater or lesser extent in accordance with compression brought to bear upon the breath, causing inflation of the ventricles and a puffing-out of the mucous membrane lining them. Externally, a corresponding forcing forward of the wings of the thyroid cartilage can be felt with the fingers, and this circumstance is important because it enables us to verify the fact that not only compression, but *control and economisation* of breath, either with or without accompanying voice, is made possible by means of the false cords and ventricles.

THE POCKET-LIGAMENT MUSCLES.

The anterior ends of the ventricular bands are attached to the thyroid cartilage, immediately above the points of attachment of the true vocal cords. The posterior ends of the ventricular bands are attached to the arytænoid cartilages, but a little further apart than are the true cords. When, therefore, the true cords are brought together, though the ventricular bands simultaneously meet at their anterior ends, they need not at their posterior—indeed, as may be seen by means of the laryngoscope, these ends may be widely separated.

In each ventricular band Rüdinger discovered a curious muscle, the *musculus ary-epiglotticus inferior*, sometimes called the "pocket-ligament muscle," or "muscle of the false vocal cords." He found, by

stimulating this muscle in the larynx of a newly-executed man, that the ventricular bands are capable of performing independent movements, both inwards and downwards, whereby the ventricular bands approach and the ventricles are opened wider. In considering that the resonating space within the larynx is thus favourably affected, Rüdinger was evidently right, but obviously on the muscle concerned lies the still more important duty of governing and economising breath, during voice especially. The use or disuse of the pocket-ligament muscles is what distinguishes a well-produced from a badly-produced note.

SOME CURIOUS ERRORS EXPOSED.

Writers and teachers galore declare that in speech and song the breath should be controlled by the diaphragm and chest muscles. Engineers could inform them that control of a force assumes two things, *viz.*, the pressure of the force, and something else to regulate the effect of it. True, in an engine, we can indirectly increase the power by piling on more fuel, but an analogous arrangement in the case of the voice would not allow of instantaneous and marked variations of power. What is required is a point of resistance. Where is it? If the answer be: "At the true vocal cords themselves," the explanation suggests a very serious objection. Voice is the result of breath being forced between the stretched vocal cords previously approximated, and the edges of these slant upward. To expect the true vocal cords to control the breath is little better than to expect a stream to be controlled by the bulrushes waving in it.

Sir Charles Santley, great singer though he was, gave a very quaint explanation of voice control. "Immediately below the vocal cords," he wrote, "there exists a valve; the breath should be raised to that valve ready for use before the sound is required, then, when the valve is opened, the pressure of wind

produces the sound or sequence of sounds the singer or speaker wills. The pressure must be maintained steadily as long as the phrase, sung or spoken, lasts, exactly as a glassblower maintains the stream of breath on the piece of glass he is shaping."

As we have seen, the valve is not below the vocal cords, where it would be useless, but above them, where required. Further, Santley's assumption of a vacuum at any time below the valve is, of course, fictitious; but very strangely, the same error was fallen into by such notable medical men as Sir Morell Mackenzie and Dr. Middlemas Hunt, in which instances the oversight is almost as extraordinary as the alleged direction of Sir Isaac Newton to make a little opening in his study door to admit his cat, and a smaller opening by its side so that her kitten could enter, too.

The great pathologist and neurologist, Sir Frederick Mott, wrote : " Above the vocal cords on either side is a pouch called the ventricle, and the upper surfaces of the vocal cords slope somewhat upwards from without inwards, so that the pressure of the air from above tends to press the edges together. The force of the expiratory blast of air from below overcomes the forces which approximate the edges of the cords and throws them into vibration." In my book on *Personality*, I quoted that statement and expressed regret that Sir Frederick Mott did not proceed to show the bearings of that fact upon others affecting voice control. From a letter kindly written to me by the great physician and investigator, Sir James Crichton-Browne, I realised that he endorsed my expressed opinions on the valvular action of the larynx, for he wrote : " The chapters on Voice, Song and Acoustics are, I think, excellent."

In dealing with questions of voice production, it is of importance that the two pairs of vocal cords should be considered together. When the false cords are in action, the true cords can act as they should, when they are not—as best they can under the circumstances. In

any case, the note produced *corresponds to* the vibratory movements of the true cords, but when the false cords are nearly approximated during voice, the true cords beat the air against the false cords and ventricles, which, in turn, economise the air and ensure to the vibrations regularity and amplitude.

When the false cords are very near together, and breath, voiced or otherwise, is compressed, there is a backward push, which causes a yielding of the chest and throat walls. This expansion takes place above, as well as below, the true vocal cords. The true cords slanting upwards, the air forced between them spreads laterally, thus keeping the ventricles puffed out, and maintaining a balance of upward and downward pressures. This balance in voice is attended by a consciousness of masterful control, whereas its absence is characterised by a feeling of lost control or of control that is uncomfortable and imperfect. In a breathy or tremulous voice there is a sensation of lost control: in a throaty voice the control—such as it is—is accompanied by an unpleasant feeling under the chin, a result of a bunching up of the back of the tongue in order to do the work that should be done—and that only can be done effectively—at the larynx. Breathiness, tremolo, and throatiness are symptoms of wrong laryngeal action, and do not admit (except for especial effects) of anything but caricatures of expression; also are harmful physically. Genuine voice culture, therefore, aims primarily at ensuring right conditions at the organ of sound, and when that end is attained the voice readily lends itself to the expression of feelings and emotions.

OTHER RESULTS OF COMPRESSION.

The utilisation of the false cords and ventricles not only gives voice control, it greatly increases the volume and ring of the voice, the intensity of sound depending

upon amplitude of vibration of the sounding body, and the density of the air in which the sound is generated, as well as upon reinforcement of the original tone.*

Further, though the note sounded by the voice corresponds with the number of to-and-fro movements of the true vocal cords, the facts should be borne in mind that the pitch of the note is determined by air pressure, as well as cord stretching and overlapping, and that, as the approach of the ventricular bands conjointly with the close approximation of the vocal cords greatly increases the pressure exerted by the little air that passes, the height of a note is affected by the approximation of the ventricular bands.

LARYNGOSCOPIC EVIDENCE.

Laryngoscopic examination, though useful in various ways, has been the source of many errors. No one can produce a properly controllable note during such examination. The vocal organs and adjacent parts are then in a constrained and distorted condition. Reasonable as it is to conclude that, as in complete holding of the breath the ventricular bands are close together, and when no control is desired they are widely separated, for breath economisation they leave only a small fissure, the final demonstration of this phenomenon has to be obtained from sources other than laryngoscopic. It is true Dr. Gordon Holmes stated that he believed the controlling action of the false cords in voice "to have been verified by laryngoscopic observation, both autoscopic and otherwise"; but the ocular demonstration apparently is never more than a slight tendency to approximation of the false cords when a person who

* There is found in the north of South America a monkey (a Mycete) not larger than our domestic cat, and sometimes called a Stentor or "howler." It has several pouches opening out from the larynx—one in the hyoid bone—and the sound it produces is the loudest made by any animal, being heard over two miles away.

knows wrong from right production of voice attempts to pass from the one to the other, when, however, the throat so changes in conformation that both pairs of cords are lost to view. With the removal of the laryngoscope, complete control can be obtained, and, simultaneously, the fuller expansion of the ventricles can be felt externally.

BLIND EVIDENCE.

The discovery of the function of the false cords and ventricles in voice was made by the late Charles Lunn about 1853, through investigating song in birds. It is interesting to note that blind evidence of the phenomenon was afforded by a London singing master, F. Romer, in a paper contributed to *The Lancet* in December, 1844. The paper formed the basis of a little book published the following year and entitled "The Physiology of the Human Voice." Romer concluded that the vocal instrument has two points for producing its vibration; that the *speaking* voice depends "on modifications and contractions of the larynx and glottis," but the *musical* voice on "a vibrated column of air, depending upon the openness of the tube." "Galen was of opinion," he stated, "that the principal organ of voice was the glottis; *but still he allowed that the trachea had a considerable share in the production of sound.* This theory was acted upon by the ancients and the moderns until the time of M. Dodart, who stated that, for the trachea to effect the resonance, as was the common opinion, it would be required that the air, after it had been modified and turned into sound by the glottis, instead of continuing its course from within outwards, should return from without inwards, and thus strike upon the sides of the trachea. This," declared Romer, "we are well aware, it does not; but M. Dodart has not allowed for the power of the bronchial tubes to produce

vibrations by muscular contraction, *and which power is a proof that they are a point of production.*"

The reader who has carefully followed my remarks will be able to realise, however, that the vibrating air *is* in part reversed in movement through the approach above of the ventricular bands, and that the results of this recoil, both as regards the "buoyant and floating sensation" experienced in the chest, and various physiological phenomena connected respectively with correct and incorrect production of voice, referred to by Romer, are what he supposed were due to primary bronchial vibrations.

THE MISSING LINK.

From the physiological standpoint, the recognition of the part the valvular action of the larynx plays in voice production is of supreme importance. It enables one to detect many errors fallen into by investigators, medical and lay, and it simultaneously shows the scientific soundness of the dogmas of the Old Italian School. The ordinary impression of the vocal organs is that of a sort of bellows with some vibrators at the top, and a sounding board above. Now, air propelled from bellows is compressed inasmuch as the aperture is so small that the contained air cannot get out immediately—much as water passing from a wide into a narrow passage is compressed—due to backward push through meeting with an obstacle to egress. But the mouth of the bellows is rigid, not like the passage at the true cords. Inasmuch as when the breath is compressed during the singing of a properly-produced note the chest and throat walls yield, and only about the same amount of breath is used as for a pure soft note, there should have been aroused a suspicion that the vocal cords are not the true point of resistance. Those facts, or at any rate their significances, were apparently unnoticed by singers

themselves, and ill-voiced anatomists rarely had the necessary examples in front of them when formulating theories: upon the supposition that the vocal cords are at the extreme top of the "bellows," the assumption that full expansion of the chest is a disadvantage, that soft singing is preferable to loud, and various other nineteenth century innovations in voice culture, would have been founded upon rational premises. The fact that the vocal cords vibrate within a chamber of compressed air puts a different complexion upon the matter. Full breathing and great compression favourably affect the shape of the throat as well as of the chest, and quickly improve the muscular development, thus leading to marked increase in the power, fullness, and sustaining power of the voice, and to a corresponding improvement in one's health and physique.

CHAPTER V

BREATH STORAGE.

"Man has not yet conceived a design which can rival or approach the respiratory bellows."—PROFESSOR SIR ARTHUR KEITH.

MECHANICALLY considered, breathing resembles in a measure the action of a pair of bellows. Expansion of the chest, providing there be ingress, leads to the entrance of air, which at sea-level exerts a pressure of fifteen pounds to the square inch. Contraction of the chest walls, if egress be practicable, forces out air. However, whereas bellows can be practically emptied of air, the chest cannot. One's potential *vital* (*i.e.*, breathing) capacity depends upon the elasticity of the lungs and the mobility of the chest walls.

When the chest is fully expanded, the lungs are greatly stretched, consequently the expiration of a corresponding breath is assisted by the suction exercised. On the other hand, when expiration is pushed to the utmost, the lungs are squeezed and therefore favour some expansion of the chest.

OLD ITALIAN EMPIRICISM.

For at least a hundred and fifty years the masters of the Old Italian School taught that in taking breath the chest should be raised and the abdomen slightly retracted. On that method it was considered but ordinary for a vocalist to sing for from thirty to forty seconds in a breath.

Many teachers of note never wavered in their adherence to the old method, and Sir Morell Mackenzie, after extensive investigation of the matter, decided that

they were right. "The old Italian style of breathing," he asserted, "is employed by some of the finest male singers that I know, and all these persons have a wonderful degree of control over the respiratory function."

SUBSTITUTION OF SPURIOUS SCIENCE.

In 1855 Professor Louis Mandl, of Paris, opposed, in the *Gazette Medicale*, the well-tried method. He maintained that inspiration was favoured by allowing the abdomen to bulge forward. "Abdominal breathing," he stated at a later date, "is accomplished by the contraction of the diaphragm, and only causes displacement of the intestines." In other words, Mandl advocated vertical, rather than lateral, expansion of the chest.

Suetonius, in his *Lives of Cæsars*, relates that the Emperor Nero had some aspirations to become a singer, though his voice was weak and husky. One of his artifices was to lie on his back, with a thin plate of lead on his abdomen. There may have been reason in *that*; but the ultra-modern singing schools of Mandl's day might readily have been mistaken for inquisition chambers—they certainly were chambers of torture. They were supplied with a variety of instruments for fixing the ribs and preventing any breathing other than "abdominal." Pupils had to lie down on mattresses, and weights of varying heaviness were placed upon their chests—sometimes the masters themselves would be the weights. Gallows and thongs were to be seen, intended for binding the upper portion of the trunk. Further, there were rigid corsets and a kind of pillory employed with the same object.

Gradually the system was modified. Here is the direction of Signor Alberto Randegger: "This act of inspiration should be performed slowly and silently, calmly, gradually, evenly, and without any effort or interruption, until the chest, ribs (and in males the

abdomen also) are completely expanded." Herr Behnke and Dr. Lennox Browne gave similar directions, and in the latter's *Medical Hints on the Production and Management of the Singing Voice* can be seen diagrams illustrating the changes that he maintained occur when breathing is properly performed, *but which cannot possibly occur.*

It does not follow, however, that attempts to carry out the instructions of teachers who inculcate abdominal breathing are not productive of much harm. Consider the cut-up runs in the Oratorio Solos edited and arranged by Signor Randegger, in conjunction with the following quotation from Sir Henry Coward's admirable work on *Choral Technique and Interpretation*: "Whenever in performances that I conduct I find young principals failing to take the runs in *The Messiah, Judas, Creation,* or similar works, in one breath, I usually wipe them off the slate, as their lack of determination to excel in this direction is a sign to me of arrested development, connoting premature vocal decay."

COMPREHENSIVENESS NEEDED.

Of course it is possible to take an enormous breath and waste most of it, or to take a little breath and use it very economically. As, however, one cannot control breath one has not taken, nor so readily control breath under one condition as under another, it behoves all who wish to excel as vocalists to aim at attaining and practising the best method and of, incidentally, increasing as far as practicable the mobility of their chest walls.

The eminent throat specialist, Dr. Gordon Holmes, declared: "I would train a pair of lungs in every known mode of action." That is doubtless excellent for increasing the vital capacity, for making a harmonious development of the various parts of the trunk, and for giving or increasing ease of movement.

I shall attempt to show what the various possible movements are. As some of these are opposed to others, it is obvious that all cannot be employed simultaneously. I can, however, draw from them such as best answer the purposes of voice culture, which processes will be found to be consistent with the practice of the Old Italian School.

STRUCTURE OF CHEST.

The formation of the interior of the thorax is usually described as conical. If we accept that description as tolerably correct, we must not forget that the floor of the thorax extends considerably lower at the back than at the front, and is convex. (More of that anon.) The *costæ*, or ribs, are the framework of the chest walls and number twenty-four—twelve on each side of the body. They are attached at their heads to the spine, and the upper seven pairs (by means of cartilaginous—*i.e.*, gristly—extremities) to the *sternum*, or breastbone. These seven pairs of ribs are distinguished by the term "true" from those below, called "false." The cartilages of the upper three false ribs combine, instead of being separately prolonged to the sternum, and the remaining two, known also as "floating ribs," are free at one end, or, rather, are simply attached to the diaphragm.

The diaphragm, or midriff, is a partition (composed partly of muscle, partly of *tendon*) which forms the base of the chest and the roof of the abdomen. It somewhat resembles in shape a basin turned upside-down. The tendinous part lies in the centre and is known as the "trefoil," from its similarity in shape to a clover leaf. The right and largest segment of the trefoil rests upon the liver, and the left and smallest upon the large end of the stomach; whilst the middle portion forms a support for the heart, to the coverings of which it is attached. The trefoil is surrounded by the muscular portion of the diaphragm, the fibres of

which pass downward and outward to the upper borders of the cartilages of the six lower ribs, to the lower extremity of the sternum, and—by two especially strong masses, called "the pillars of the diaphragm"—to the spine.

COSTAL BREATHING.

By clasping the hands in front of the body and alternately raising and lowering them, meanwhile lifting both shoulders upward, but one more than the other, we copy with fair accuracy the respiratory movements of all the ribs except the floating ones. The lower shoulder represents a point of attachment of a rib to the spine, and the upper shoulder a corresponding point at the sternum—which, however, is carried forward as well as upward with the ribs. Simultaneously, too, there is a slight alteration in the height of the backward attachment, the spine, which somewhat resembles in shape the central curves of the letter S, being "bent straighter," balancing and steadying by shortening of the *erector spinæ* (muscles which lie alongside the spine) the action of the rib muscles.

CLAVICULAR OR SCAPULAR BREATHING.

One should carefully distinguish between such raising of the shoulders as occurs through partial straightening of the spine, and the raising of the shoulders which is due to pulling up the clavicles (the collar bones) and the scapulæ (the shoulder blades), and with them the uppermost ribs. Inasmuch as the uppermost ribs are short and but slightly flexible, little advantage as regards breathing capacity can be gained by pulling up the shoulders. Moreover, it necessitates a certain amount of rigidity and constriction about the throat. It is, therefore, unsuitable for ordinary vocal purposes. Nevertheless, as the lungs extend about an inch and a half into the root of the neck, and the bronchial tubes

leading to the apices turn upward and are spiral in formation, those parts are seldom well developed. In accordance with Dr. Gordon Holmes' dictum and advice, clavicular breathing may be practised occasionally in order to insure (as far as possible) the greatest available *horizontal* expansion of the chest, and to conduce towards *complete* lung development.

RIB MOVEMENTS AND THE DIAPHRAGM.

The nature of the work of the diaphragm is not so evident as is that of the rib muscles; but the fact is clear that, as the lower ribs are attached to the rim of the diaphragm, they, when raised, of necessity lift the edges of the diaphragm and thereby stretch the muscular portion. The base of the chest is consequently flattened and widened, and the vertical diameter of the side portions of the chest is lessened. There is a considerable gain in vital capacity by this action, for, owing to the space occupied by the heart and to the shape of the diaphragm, the greatest breadth of lung substance is not close to the waist, but opposite the fourth pair of ribs, counting downwards.

DIAPHRAGMATIC MOVEMENTS.

What movements can the diaphragmatic muscles execute on their own account? When the muscular fibres of the diaphragm shorten, they pull unequally. It thus transpires that the left segment of the trefoil descends to the greatest extent, an equal descent on the right side being prevented by the interposition of the liver. The central segment of the trefoil, being connected with the pericardium (*i.e.*, the membranous bag enveloping the heart), descends but slightly.

Muscular action is usually accompanied by a fixing of one extremity of the muscle concerned. In that case, lowering of the centre of the diaphragm implies a fixing of the ribs to which it is attached. The centre of the diaphragm may be fixed by drawing in the lower

portion of the abdomen, thus pressing the liver and stomach upwards against the trefoil. With the diaphragm thus supported, shortening of its muscular fibres raises, *but draws inward*, the rim of the diaphragm, except where attached to the spine. (Obviously the pillars of the diaphragm are debarred from this movement.) The circumference of the lower portion of the chest is thus decreased.

Some writers seem to assume that the diaphragm is capable of contracting upon itself, so to speak. The possibility of such action is by no means certain; but assuming it to be practicable, what are its bearings upon the question at issue? The pillars of the diaphragm, and also the adjacent parts, by shortening, must lower the bulk of the back portion of the diaphragm, and bring the remainder of the rim of the diaphragm nearer the trefoil, lowering that too.

The foregoing observations show the fallacy held by many writers that contraction of the muscular fibres of the diaphragm raises and *expands* its rim. Such action would necessitate a *lengthening* of the muscular fibres of the diaphragm. Obviously, what is ascribed by these writers to diaphragmatic action is a consequence of the raising of the ribs, and the only power of chest expansion possessed by the diaphragm lies in the capacity already described of increasing the vertical diameter of the chest.

However, a use of diaphragmatic contraction in inspiration, in addition to what has already been referred to, is worthy of particular notice. Let us think for the moment of the changes in the abdomen in consequence of costal and abdominal inspiration respectively. In costal breathing the abdomen is somewhat flattened (some of its contents are pressed upwards and backwards), but is necessarily expanded in the upper part. (A practical test will confirm that statement.) But there is one part of the upper portion

of the abdomen not filled out—the sternal angle, the inverted V formed, a little above the navel, by the lower ribs. After the taking of a purely costal inspiration that angle is very clearly defined. On the other hand, in abdominal breathing the sternal angle is filled up by the abdominal contents pushed downward by the lowered diaphragm. The lower portion of the abdomen also projects very noticeably.

Now, suppose that when the ribs are raised the muscular fibres of the diaphragm be shortened, what then occurs? Either the base of the chest is contracted or (and this is the important point), the diaphragm becomes somewhat flatter. "But *can* such a contraction of the diaphragm *then* take place?" may be asked. That it can is capable of a very simple proof. What happens when the diaphragm is lowered? The abdominal organs are pushed downward. And what must occur if the lower part of the front abdominal wall be flattened? There must be a projection at the point of least resistance, *viz.*, at the sternal angle.

THE ORDER OF INSPIRATORY MOVEMENTS.

It was noted, as a remarkable fact, that Sandow fully expanded the upper part of the chest before completing the expansion of the lower. The movement just described shows why that is more effective as regards breathing capacity than is the ordinary method of inspiration. But the usual *order* of inspiratory actions can be equally effectual, *i.e.*, the centre of the diaphragm can be lowered before the ribs are raised, in which case a gradual upward expansion occurs.

SOME ERRORS EXPOSED.

Dr. H. H. Hulbert and others have recommended, as the first correct step in inspiration, the retraction of the abdomen, in order to fix the centre of the diaphragm by pressing the liver and stomach against it. But, if the whole of the abdomen

be retracted, part must again protrude to allow of the elevation of the ribs—the spreading out of the diaphragm. Of course this bulging need not be sudden: there may be a gradual give and take. Apparently Dr. Hulbert subsequently realised the faulty nature of his observations, for a few years later he stated that "the abdominal muscles should not be actually contracted or relaxed, but in a condition of tonicity."

Many "authorities" write as if costal breathing is performable *simultaneously* with abdominal. That is an error: the movements are opposed. A practical test by means of the hands is sufficient to convince anyone that if the chest be raised the lower part of the abdomen recedes, and that if the lower part of the abdomen projects the chest droops.

Much of the credit due to costal breathing is ascribed, in consequence of bad observation, to abdominal. It should be noted that in abdominal breathing the lower part of the abdomen projects, in costal breathing the upper—and to a greater extent than in abdominal; whereas, in a combination of the abdominal and costal methods there is an additional bulge at the sternal angle.

It will be observed, too, that in effect the diaphragm does not really flatten out, but moves up and down in respiration—a fact confirmed by Dr. Halls Dally and Dr. Hugh Walsham, with the aid of an instrument called the "orthodiagraph," which, for the purpose of actually seeing the movements of the internal organs, requisitions X-rays, and also measures with exactitude, and traces—by means of automatic writing on a board placed behind the patient—the respiratory movements performed.

THE REQUIREMENTS SATISFIED.

A man of average height usually breathes in and out, under ordinary circumstances, about 30 cubic

inches of air. This is called "tidal" air. After exhaling it, he has remaining in his lungs about 200 cubic inches of air, half of which, called "supplemental," he can expel by exhaling to the utmost. (Were it not for the supplemental air, when a crumb had gone the wrong way it could not be ejected, for the inhalation of a fresh breath would carry the crumb still lower.) The air remaining in the lungs after exhalation of the supplemental is termed "residual." Above the tidal breath, a hundred or so cubic inches of air, called "complemental," can be inhaled.

In the light of the information contained in the chapter on "The Valvular Action of the Larynx," it is obvious that the amount of complemental air at the singer's disposal should be increased as far as practicable—provided such increase does not cause rigidity or constriction—for thereby ring and endurance of voice are increased. Further, it is obvious that the supplemental air should be encroached upon as little as practicable.

The mode of inspiration here advocated inflates the chest more advantageously than any other; it increases the measurement from summit to base, from side to side, and from front to back. Take a watering hose from which water may be expelled in either of two ways, *viz.*, by pressing on the yielding sides, or by means of a piston from below. If the pressure be upon the sides, the jet is more or less unsteady; but if from below, the pressure can readily be made and kept steady. Similarly, when breathing is comprehensive, the slight retraction of the abdomen brings the parts at once into position for the abdominal muscles, by contraction upon the abdominal contents, to push upward the piston—the diaphragm. That advantage, combined with the utilisation of the valvular action at the organ of sound, is one of the greatest mechanical assets of fully-equipped singers and speakers.

CHAPTER VI

BREATH GOVERNANCE.

"The virtuoso in breathing is nearest to the virtuoso in singing."—OLD ITALIAN ADAGE.

WHAT IMPROVEMENT IS AND IS NOT.

"A prominent arched chest," wrote Professor Kollman, "is an infallible sign of a vigorous healthy skeleton; whereas a narrow, flat, and still more, a bent thorax, is a physical index of bodily weakness and inherited decrepitude."

Although purposive restriction of the chest capacity interferes with the normal capacity of the lungs (thereby courting pulmonary consumption), an increase in the size of the chest is not necessarily an improvement. As to shape, that may advantageously be improved, but the increased measurements that may (indeed are likely to) result are due in large part to increased muscular development. Mobility of the chest, on the other hand, implies improvement in more important respects; the bones and cartilages are better suited for their respective functions, and the lungs are rendered more elastic. For the furtherance of the end in view, it is essential that complete *ex*piration, as well as complete *in*spiration, should be aimed at. So many students are intent upon enlarging their chests, and ignore—because unaware of—the fact that lack of attention to full expiration, especially if full inspiration be much practised, tends to lessen chest capacity—though enlarging the outer covering. Such a condition is a real and serious disadvantage, especially if, probably due to dietetic indiscretions, the body tissues as a whole lack tone; the lungs may come to resemble, in a measure, an over-stretched piece of elastic, the air

vesicles and connective tissue may be excessively increased in size, and the sufferer may be conscious of a difficulty in exhaling—a symptom of the complaint, a type of *emphysema*. It should always be borne in mind that a chest may be big and covered with huge muscles, and, nevertheless, the vital capacity may be small. Singers and speakers should have good, but not necessarily huge, muscles, and should rather aim—but aim sanely—at making their chests as capacious and mobile as possible. Thereby longevity is markedly favoured. The fact is significant that, when, in 1635, Thomas Parr died, through being feasted at court, at the age of (it was said) one hundred and fifty-two years and nine months, a post-mortem was made by Dr. Harvey (the discoverer of the circulation of the blood), who found Parr's organs without any signs of degeneration, not even the usual ossification of cartilages having occurred.

FREEDOM OF MOVEMENT ESSENTIAL.

When breathing exercises are performed in bed, the pillow should be removed and care be taken that the back of the waist be not pressed against the bed. These precautions help in procuring and retaining a correct carriage, and allow of fuller trunk expansion than would otherwise be possible.

However, though serviceable in many instances and for particular purposes, the recumbent position is by no means the ideal one, the breath measurements made by means of the spirometer proving that the lung capacity is greatest when one is standing erect—which, of course, is usually the case in public singing and speaking.

On no account hamper the bodily movements by tight or heavy clothes.

BIRTHDAY CLOTHES.

Over a hundred and sixty years ago, Dr. Benjamin Franklin ascertained from experiments with

Santorius' Balance that the amount of "insensible" perspiration under ordinary conditions is more than twice as much when one is nude than when heavily clothed, and he was a warm advocate of "tonic" air baths. The external skin is a sort of third lung. When the Australian aborigines and other savages unaccustomed to any clothing assume it habitually, they are prone to succumb to pulmonary consumption. The Eskimos of the west coast of Greenland were persuaded by Danish missionaries that the night-time habit of remaining nude within their snow houses as an offset against the impure atmosphere and the furs they usually wore was indecent. Compliance with the suggestion of the missionaries that clothes should be worn at night resulted in the Eskimos beginning to die off from pulmonary consumption.

BODY POISE.

The Chinese say, with a moral significance: "Some people stand so upright that they lean backwards." Literally, most people lean backwards when they think they are standing upright: if it were possible to drop a plumb-line vertically from the top of the head, the weight would touch too far back. It is sometimes necessary to point out that we balance by even weight, not by muscular power merely. If the line of gravity fall too far back, some part of the body must protrude at the front to compensate, and, unless there be bending at the knees or groin, the abdomen inevitably projects. On the other hand, by bringing the line of gravity to midway between the balls of the feet the chest is advanced and the abdomen is retracted. This is the correct poise.

If at the commencement of the act of inspiration the body be leaning backward, there is an antagonism between the abdominal and chest walls when an attempt is made to breathe fully; the chest needs raising, but the projected abdomen cannot be drawn inward without

an alteration in the poise of the body. By assuming the correct poise, the chest is actually ready for lateral expansion.

Raise the body to the toes, then lower it again, and directly the heels touch the floor refrain from carrying the body further backward. That is a test of good poise : one should be able to begin to raise the body to the toes without first bringing it more forward.

THE NOSE.

The nasal cavity is divided into a number of very small passages by means of the bones and cartilages of which it is mainly composed. The lower two-thirds of the nose contain no nerves of smell; their use is the purification, warming, and moistening of inspired air. Breathing through the mouth tends to dry and chill the throat, which for best voice must be warm. Breath should therefore be inspired through the nose whenever practicable; certain florid vocal music is a preventive, and, further, occasional audible inspiration is necessary for artistic purposes.

Some persons suppose that to breathe through the nose is a difficult performance. In reality, except when the passages through it are partially blocked by mucus, adenoids, or other obstacle, respiration through the nose can only be difficult when one is either "out of breath," or when one interposes an obstacle, through *effort*—a result of misconception. The effort causes contraction of the nasal valves and of the throat. A feeling of tightness at either place is unnecessary and wrong. It should always be borne in mind that breath enters the lungs to equalise the pressure of air inside and out; that in ordinary inspiration it is not the entering air that causes the chest to expand, but the expansion of the chest that allows the breath to enter. Sniffing, gasping, and the making of a rustling noise when breathing (except when "out of breath"), are

therefore clearly the result of wrong locations of energy.

Do not sleep with the head thrown back: slightly incline it towards the chest. That will tend to prevent breathing through the mouth during sleep.

TESTING PROCESSES.

The student should carefully test the various points to which attention has been drawn, should see for himself or herself the disadvantages of bad poise, and at the commencement of the practical study of respiration should take each process in turn, closely analysing it.

INSPIRATION.

For vocal purposes this needs to be performed easily, and usually silently, though quickly. To begin with, however, and for purposes that will be described later, breath should be inhaled slowly—indeed, the whole process taken to pieces. Having assumed a correct body poise, place the palms of the hands against their respective sides of the lower chest; exhale, then expand the lower chest as much as possible sideways. When this is done the lower part of the abdomen is somewhat retracted. Probably there is a slight recession at the sternal angle. Remove one hand from the chest to the lower part of the abdomen, and place the other hand on the sternal angle. *Think of* slightly "setting" the diaphragm, and that will cause a protrusion at the sternal angle. This slight movement can readily be associated with the expansion at the lower ribs and occur almost simultaneously with it.

In a *mezzo-respiro*, or half-breath, the expansion should be almost entirely confined to the lower part of the chest and should consist mainly of diaphragmatic inspiration.

Having mastered lower chest expansion, the upper

should be attended to, the chest well arched, and a considerable expansion felt on each side of the spine, which can be ascertained (by the fingers) to be apparently retracted—really straightened simultaneously, thereby increasing the height. The shoulders should be well spread out, but not *drawn upward*, nor tightly backward. Stretch both arms sideways as far as possible, and then you have the shoulders where they should be.

After analysing the inspiratory processes, combine them in the taking of a full breath. Hold the breath a few seconds, then allow the chest to collapse.

EXPIRATION.

The nature of this varies in accordance with whether the air expired be compressed or not. For the moment I deal with expiration *un*accompanied by compression. This consists of a gradual return to the conditions present at the commencement of the act of inspiration, the chest gradually subsiding and the abdomen becoming less retracted.

After full inspiration the first portion of expiration is performed through the elasticity of the distended trunk, and in governing such expiration the first duty is to restrain the tendency to breathe out quickly. Gradually the restraining of contraction is lessened, and eventually the chest has to be contracted, restraint having to be employed to *prevent* expansion.

THE EXTREMES.

The quick way to overcome the difficulty of governing the end of a breath is to exhale as much air as possible and then keep the chest contracted for several seconds. By the way, this procedure, inasmuch as it increases the amount of carbon dioxide in the system, tends to induce sleepiness and can be effectively employed in cases of insomnia; but do not practise it over much. It is of great service for over-

coming emotion; the direction to take a deep breath is useless in this connection, except as an indirect suggestion.

Just as keeping the chest contracted helps in the governing of one end of a breath, keeping the chest and abdomen motionless after taking a full breath helps in the governance of the other end. In both instances muscular development is also favoured.

BREATH COMPRESSION.

Air is elastic and if squeezed presses equally in all directions.

Breath compression, being a matter that intimately concerns voice, the subject will be dealt with in detail later. It is introduced here because breath compression is excellent from the standpoint of health and lung development, and also because it should be clearly distinguished from mere holding of the breath. Some breathing exercises, good from the aspect of health, if practised without the knowledge of this distinction can, and not infrequently do, lead to a singer's undoing. The reason why will be seen from Chapters VII and IX.

To compress a breath, hold it and simultaneously make a movement which under normal circumstances would cause exhalation. If the false cords be in contact, the breath being unable to escape, is squeezed. The lower part of the abdomen may be held motionless and the upper part of the chest contracted, but that is awkward and to most people rather difficult. The best way from the vocal and health standpoint is certainly to draw in the abdomen, thereby further expanding the chest laterally.

An excellent exercise—which, nevertheless, requires caution in its employment—is to hold the breath and meanwhile draw the abdomen inward, relax (but not *push* forward) the abdomen, draw it in again, relax, and draw it in a third time as far as possible—apparently trying to reach the loins.

CHAPTER VII

NATURE AND ART.

"Nature plays at dominoes with you; you must match her piece or she will never give it up to you."—OLIVER WENDELL HOLMES.

"CHANCE" AND DESIGN.

Although one cannot produce vocal tones other than are admitted by the conformation of one's organs, those peculiarities of voice which are disagreeable to the ear are products of faulty physiological action. Anyone can produce bad tone, and nearly anyone can produce good tone when the right means are known and applied. Correct and persistent endeavour gives proficiency, physical and mental.

A few persons undergo without intent a continual course of voice improvement, but the triumphs of such chance culture are hardly commensurate with the triumphs of art. Nevertheless, chance culture is prone to lead the uninitiated to hold erroneous notions regarding voice and voice culture. So-called "naturally good" voices are often inferior potentially to some supposedly very defective ones.

THE INFANT'S FIRST CRY.

Before birth a child has not used its lungs. During birth its trunk is squeezed, consequently, when liberated, expands again. Air rushing through the apertures (the nose and probably the mouth) enters the lungs, causing a slight shock to the system, evidenced by a sudden closure at the larynx. The opening of the larynx, and

the simultaneous release of part of the air inhaled, results in the first cry of infant life. The mouth being opened and the tongue relaxed throughout, that cry is an "ah." It is the simplest element of which the voice is capable, and, though lack of continuity of pitch prevents it from being musical, it is *rightly produced*.

PROGRESS OR RETROGRESSION?

The first cry of infant life is only a very elementary matter. Later, the child commences to babble on its own account, and attempts are usually made to lead it to speak. The child may happen to produce good tone by mimicry—*i.e.*, through imagination, self-confidence, and, possibly, intentional observation. But as most people do not produce their voices aright, the babe is hardly likely to invent what is æsthetically lacking in the examples before its notice. If a child happen to be born deaf, musical voice is out of the question. On the other hand, the voice of a child who has a keen appreciation of beautiful tone and good mimetic powers, is likely to be sweet. What a child mimics that is wrong may, likewise, establish bad habits, and thus the bodily parts may be unfavourably affected.

The inclusion of consonants in speech tends to bring about wrong locations of energy through the fusion of actions that should be kept distinct, and vicarious constriction at the back of the mouth is apt to occur. The hapless individual concerned feels as if voice is a matter of strain, not of ease. Nevertheless, the same individual, when giving way to emotion, automatically brings into action the right mechanism. That applies, however, to speech only; expression in song corresponds *analogically*, and only partially, with expression in speech, and is in a measure definitely artificial. Even in speech, when power is required, incorrect attempts to produce voice are extremely apt to occur in most persons, especially gripping at the back of the mouth.

In speech, and still more in song, the number and intricacy of combinations of nerve and muscle activity are necessarily very large. Originally, much energy is misdirected owing to lack of knowledge and attention. The redundant action thus brought about has a partially frustrating effect—actually combating the required muscular contractions. An adult voice, unless methodically and skilfully trained, is rarely produced more than approximately correctly—even in a part. Moreover, not only is that not done which should be, certain things that should be done are not. Omission of proper utilisation of the false cords and ventricles stands at the root of most vocal troubles; it inevitably tends to upset the muscular balance, for by involving neglect of certain muscles essential to correct production, it tends to develop others unduly. Although for certain purposes the artiste may—nay, *must* use bad production, complete control of his instrument is indispensable. When voice manifests strain, soulful singing is impossible. Some may think that therefore the way to get right production of voice is to approach it from the emotional standpoint; but bad production of voice tends to turn intended emotionality into caricature. Musical persons who are vocally inefficient are prone to try hard—*i.e.*, to substitute strain for ease. The vocal organs should be made so subordinate as to allow of simultaneous attention to the attainment of higher and still higher ends. Voice culture is primarily a *means* towards an end, not the end itself.

Expertness is acquirable by dispensing with hindering and opposing thoughts and movements, and by ensuring serviceable ones. One must abolish bad associations and firmly establish good ones. For those purposes one must get at the root cause of vocal errors; the attacking of symptoms, and the attempt to dispense gradually with undesirable muscle contractions, is inevitably a long, clumsy, and rarely successful experiment. A definitely superior mode of procedure lies

open, *viz.*, the gradual establishment of a new neuro-muscular mechanism (a new set of habits) on the basis of relaxation. That is rather more than "dividing to conquer" (*some* so-called "methods" should be divided and never be put together again); it is the most nearly certain of avoiding complications. Poise and comprehensive breathing should be followed by something corresponding to the first cry of infant life.

PORPORA'S INNOVATION.

Tosi had written, in 1723: "Let the master never be tired of making the scholar Sol-fa as long as he finds it's necessary; for if he should let him sing upon the vowels too soon, he knows not how to instruct. Next let him study on the three open vowels, particularly on the first, but not always upon the same, as is practised now-a-days; in order, that from this frequent exercise he may not confound one with the other, and that from hence he may the easier come to the use of the words." The timetable made for singers by the Bernacchi school arranged for ninety-five minutes of Sol-faing to twenty-five of scale singing per day.

Porpora, however, in his *Elements of Singing* (in the Archives at Naples) stated: "The vowel A, as pronounced by Italians, is to be used to each note of the scale, as the best calculated for the production of a correct intonation."

Domenico Corri explained (in *The Singers' Preceptor*): "Many devote years to this practice" (Sol-faing) "alone (in Italy very frequently six years are thus employed), thinking it impossible to be proficients in vocal music without such length of practice—while others but slightly regard the use of solfeggio; and here I may quote my Preceptor, Porpora, whose decided opinion it was, that solfeggi were not properly understood; the improvement of the voice, he maintained, is best acquired by sounding the letter A—the position

of the mouth in uttering this letter being most favourable to produce a free and clear tone.

"The system of Sol-faing continued to be rigidly observed, while music was chiefly cultivated in the Cloister, and its attainment was a complicated task of great labour and difficulty; the syllables applied to each note were changed as the modulation varied, *Do* was always placed to the first note of the key, *Re* to the second, and so on; therefore the same note by change of key might alternately be expressed by each of the seven syllables: this system has been gradually modified, and at length mostly abandoned, the gamut being now reduced to the unvarying appropriation of *Do* to C, *Re* to D, *Mi* to E, *Fa* to F, *Sol* to G, *La* to A, *Si* to B, for every modulation of key, which has removed much difficulty."

Few, I suspect, and certainly no Tonic Sol-faists, will endorse Corri's argument regarding the immovable *Do*. The following statement, however, is obviously to the point: "The practice of Solfeggio is, I allow, a useful study so far as relates to the acquirement of articulation, and I strongly recommend its exercise, but not until the scholar has attained correct and perfect intonation; if an interval cannot be executed with precision by uttering the letter A (as advised by the celebrated Professor Porpora), no greater assistance will be derived from sounding the syllables Do and Re, and from Re to Mi and so on, to any other interval; it is supposed that the syllables convey the idea of the distance of the intervals, but they can no more give this knowledge, than lines drawn on paper could instruct anyone in the steps of dancing."

In treating of Sol-faing, Richard Mackenzie Bacon (whose work on the voice, may I remind my readers? was published in 1824) remarked: "This exercise is a preparative to the junction of words and notes, and accustoms the pupil to the various vowels. But I differ from the instruction books so far as to think that

this should never be tried till the conformation of tone and tune be completely and assuredly fixed by habit upon the syllable *Ah*; and in the introduction of solfeggizing a care not less scrupulous in these respects should be exerted."

Tosi recommended practice on the vowel *i* (ee), where facility in the employment of the high notes was deficient. Nevertheless, he stated that "every master knows" that i (ee) and u (oo) are the worst vowels for rapid passages, "but everyone does not know that in the best schools" the close *e* (like *a* in "fate") and *o* (as in "old") are not permitted.

I (ee) and *u* (oo) the old Italian singers called "prohibited vowels."

I consider that Porpora, by his apparent neglect of vowels other than *a*, actually helped towards their mastery. Of this, more anon. I should, however, remark here that, by his rule regarding vocalisation, Porpora based everything upon the reproduction of the first cry of infant life, and, by keeping that principle prominent throughout training, guarded against retrogression.

CHAPTER VIII

HOW TO THINK ARIGHT.

"We are afraid of the obstacle, without dreaming that very often we have created it."—LUCIUS.

RATIONAL FAITH.

SEVERAL years ago I was teaching, at public baths, some young ladies how to swim. An instructress, observing the daring and success that followed my explanations and demonstrations, exclaimed: "They have some confidence in you, and no mistake!" To which I returned: "They have some confidence in the buoyancy of the water."

Similarly, I am attempting to make so plain what I wish to impart regarding voice culture that a rational confidence will arise and my counsels be followed fearlessly. You are having the desired ends pointed out, and the means (physical and mental) whereby they can be attained.

No one who has perused what I have written on hypnotism can be mistaken in this: I am no believer in attempting to instil truths *dogmatically*. When using hypnotism, just as at other times, I appeal to the understanding, and I hold that dogmatic suggestion is a relic of procedures founded upon factitious notions relative to that art.

MISPLACED CONFIDENCE.

The first step towards learning is often unlearning. Confidence may be misplaced—may undeservedly be reposed in oneself or a bad "method." Many persons come for "finishing" lessons when they know nothing of the rudiments. In one sense, every good lesson is

a finishing one—and, in another sense, so is every bad one!

The undermining of misplaced confidence often ensures the acquisition of the correct mental attitude. Nevertheless, a little experiment, used by me for many years, can form an introduction to the mental factor, and a serviceable surprise to nearly everyone who has not acquired that nice discrimination known as "the sense of absolute pitch." I say to the pupil: "What is your highest note?" If the answer be "G," I say: "Please to sing it"; and, apparently for the purpose of giving the note, I play a semitone or tone higher—of course without letting the pupil observe the fact—and in the vast majority of instances the note is sung. I then draw the pupil's attention to what he or she has actually sung, and say: "Even now, you see, you can do more than you believed you could. I think you will realise that when you have learned to use your vocal organs aright your compass will be at least considerably longer than it is at present."

ASSUMPTION.

Please to bend an arm at the elbow. You have done so? Now, pray, *by means of that movement* what did you do to the biceps—the muscle on the inside of the upper arm? If you answer, as most persons do, "I contracted it," I demur. Had the biceps been severed, you could not have performed the required bending. It was the contraction of the biceps that bent the arm, and yet you felt as if you squeezed the biceps by bending the arm. What is the lesson to be drawn? Surely it is that when we *assume* the performance of an action, something within us finds the means if practicable. Naturally, therefore, if we assume contrary to what we desire, we defeat ourselves. Persons, through wrong assumption, may be unable, temporarily, to swallow pills, and nevertheless may accidentally swallow plum-stones. The assumption that you can do as counselled

must be absolute. The notion—the assumption—of *difficulty* creates clumsiness and strain, physiologically incorrect action.

Some persons lose their voices temporarily through cold or other indisposition, and later, though potentially able to speak, think they cannot, and consequently remain voiceless, sometimes for years, and occasionally —no doubt—permanently.

When an action is performed easily, it improves with practice, as do also the parts used. On the other hand, strain may lead to progressive incapacity.

From the facts that assumptions of impossibility and difficulty frustrate one's endeavours, it is apparent that one's attention should, in general, be placed upon that at which one is aiming, rather than upon that which one wishes to avoid.

Attention as ordinarily exhibited is characterised by accompanying nervous and muscular tension, and proportionate immobility and ineffectiveness. Attention should be easy, active, prompt, and comprehensive; and to give to attention those qualities, it should be based upon *relaxation*.

RELAXATION.

When the right attitude of self-confidence is assured the student is ready for the mastery of Relaxation—for relaxation, though in itself an aid to right thought, needs self-confidence for its acquisition. Only with very feeble-minded persons is the capacity of relaxation unattainable, though some persons are far more prone to unnecessary action than are others.

Relaxation is not mere flaccidity, for the muscles are in a state of tonicity—are balanced in action. The student should recollect that relaxation should be present wherever muscular action is unrequired.

Relaxation of body and tension of mind cannot co-exist, and, similarly, tension of body brings with it tension of mind. But to relax at all, one must *imagine*

relaxation—directly or indirectly, as in preparing to slumber. We can nevertheless meet any desired mental condition half-way—assume the physiological equivalent to it, *e.g.*, lift an arm, and then drop it whilst thinking "that arm is limp!"

The student of voice should learn to relax completely various parts of the body at will whilst standing as well as whilst lying down. He should stand with the arms hanging limply at the sides, and then let someone lift or perform other movement with them. The vast majority of persons so tested, fail at first. Where one places an arm, it often remains, especially if one purposely looks at the other, or if the movement be performed quickly and then suddenly ceases.

It sometimes happens that the effect opposite from what is intended is produced, effort being present through intense desire to get the best possible relaxation. A person may stiffen the tongue at its root directly he is told to relax it; whereas, if merely told to open his mouth, the desired condition of the tongue is present. Relaxation consists in refraining from action, not in performing it.

When the necessary knack is acquired, a simple matter is extension of the experiments. Especial attention should be given to relaxation at the neck, jaws, and tongue. Then, whilst lying down, the legs should be relaxed in turn; and, lastly, the activity of the body as a whole should be reduced to a minimum.

Exercises in relaxation are valuable from the standpoint of health, make the voice user sensitive to the least excess tension, increase vocal resonance and compass, and help the mentality.

Testing Attention.

How can one tell whether one is bringing to bear the right kind of attention? The answer is: By observing whether one's attention is accompanied by unnecessary muscular contraction. At least a slight

knitting of the brows invariably occurs when one realises that one is confronted by a difficulty, but it should not be pronounced, and there should not be present a general muscular tension. This matter of attention is, of course, of much importance throughout one's training, but its need is particularly observable when interpretation of a composition is the object. There must be present a pronounced mobility of attention if the little alterations of mood are to be faithfully portrayed.

UTILISATION OF THE CONTEMPLATIVE MOOD.

The frequent induction and utilisation of easy attention (a contemplative mood, or meditative condition) is a very valuable practice. I recommend you to daily recapitulate when in that condition the substance of the lesson or study, in order to encourage reflection thereon, and to suggest its assimilation, and ready reproduction or actualisation.

UNINTENTIONAL SUGGESTIONS.

I never say to a pupil: "If you do so-and-so you will have an unpleasant sensation in such-and-such places," although I may say: "When you did so-and-so you had this and that sensations"—the first statement *suggests* a sensation which, if expected, will appear in any case: the second is a *guide* for the pupil.

I emphasise the advisability of gaining endurance gradually, but I avoid suggesting to a pupil that more than a specified length of practice will cause fatigue. In short, I endeavour always to be on my guard against giving any suggestion *un*intentionally.

CHAPTER IX

VOICE REVELATION.

"A good beginning is half the battle."—CERVANTES.

BREATH-COMPRESSION IN MUSCULAR FEATS.

WHEN a great muscular feat has to be performed the false vocal cords come together and the breath is compressed by retraction of the front abdominal wall. The especial use of the compression is that thereby the framework of the body is steadied. Although, however, it is customary to take a full breath previous to lifting a heavy box, for example, a *full* breath is a handicap in weight-lifting, for such a breath itself uses up a considerable amount of energy and is unnecessary. In the case of voice, full inspiration is an advantage: breath is the motive power, and a liberal supply makes the work easier by throwing more of it upon the natural elasticity of the body. Besides, a vocal feat is unlike the vast majority of other feats, for it demands continued compression of outgoing air. Even the worst of vocal tone is necessarily accompanied by breath compression of some kind, though the resistance is wrongly located. In correct production the false cords have to be so employed that they allow no more breath to pass than is essential to the attainment of the required effects.

LESSONS FROM A POP-GUN.

Charles Lunn was accustomed to keep in his studio a pop-gun in readiness for illustrating certain matters relating to compression. For many years I have acted likewise, and a dialogue somewhat as follows has commonly occurred.

"In certain respects" (I may say to the pupil) "this pop-gun resembles the chest and throat. At present the piston, which I ask you to consider as representing the diaphragm, is pushed up the barrel. The air we are about to use is at present outside the gun. If I wish to cause that air to enter, what must I do?"

"Draw down the piston."

"What great difference is there between the action of filling the chest and that of filling the pop-gun?"

"The chest is enlarged sideways as well as from top to bottom."

"You have told me what I must do with the *piston* in order to fill the gun, but what must I do at the *nozzle*?"

"Nothing."

"That fact should act as a reminder that in taking a breath you should do nothing at *your* nozzle (your nose), merely expand the chest. . . . If I want to squeeze the air in this gun, what must I do?"

One young lady who, it must be admitted, was by no means wanting in artistic judgment, though obviously in scientific acumen, looked very puzzled and finally answered: "I suppose you must pinch the sides of the pop-gun." Most people give the right answer, viz.: "Put in the cork and push up the piston."

"Were the sides of the gun not rigid but elastic, what would happen?"

"They would yield."

I then push up the piston, and the cork is ejected.

"What forced the cork out?" I ask.

"The air inside the gun."

"Why?"

"Because the pressure it exerted became greater than the resistance offered by the cork."

"When the cork was ejected there was a 'pop.' Why?"

"Because the air that was compressed met with resistance from the external air, and audible vibrations resulted." (At least, that is the explanation that *should* be given.)

"If I want to make a louder tone with the pop-gun than that you heard, what must I do?"

"Increase the compression. You must press the cork in tighter so as to make more resistance."

I then make two "pops" with the gun, the second "pop" much louder than the first, and ask: "What other change besides an increase in power takes place when the compression is increased?"

"The 'pop' is higher in pitch."

The pupil is then prepared for the application of the principles of compression to his or her own voice.

PLATFORM ILLUSTRATION.

In lecturing and giving demonstrations of voice production, it has long been my custom to ask for a medical man to mount the platform and to examine certain points to which attention is about to be drawn. I then illustrate with my own body inspiration and expiration, and show the difference between merely holding a breath and compressing it—compression causing inflation of the ventricles of Morgagni and a distention of the chest, especially at the false ribs, and the partial obliteration of the corrugations of the trachea. I then sing two notes, one of which is correctly produced and the other wrongly, and I ask the doctor to observe that inflation of the ventricles is present in the first only. To elucidate the matter further, I then compress a breath and, whilst retaining the inflation of the ventricles, sing a sustained note, which, as the conditions are right *in advance*, is begun crisply. I continue that note correctly, and then sing two others, one of which is begun and the other ended without inflation of the ventricles. Lastly I show, by vocal illustrations, that bunching up of the back of the tongue, and other so-called vices of

production, are seldom more than symptoms that the false cords and ventricles are out of action. I emphasise that what is needed is the removal of the root cause of bad production, not the mere attaching of symptoms.

Of course the control of the voice-producing parts is not so simple as it may seem from illustration or the short description just given. Further, a person who has mastered voice production can sing well though inhaling faultily and assuming an actually bad pose. There is, however, a best way of doing anything, and the best way of doing the first thing in cultivating a voice will now be described in detail so as to guard against misconceptions on the part of readers.

HOW TO STAND.

Many persons find difficulty in managing the processes of respiration: one reason often consists in faulty body-poise, elevation of the chest being antagonised by protrusion of the abdomen—contrary to the description (of body-poise) in my chapter on *Breath Governance*. But right poise does not necessitate the heels being kept together as is so often advocated. Grace (a factor of no mean importance on the public platform) is favoured by having one foot a little in advance of the other. From time to time, one foot may be drawn back, as in dancing, and the other advanced.

The elbows should not be stuck into the waist, nor *rested* against the body. If a sheet of music be held, the hands should not be opposite each other, which is ugly.

Neither throw back the head nor draw in the chin, for those positions give rise to throatiness. Ordinarily, there is a curve at the back of the neck, which curve corresponds to one in front. Have the back of the head raised and the chin lowered, rendering the back of the neck straight. Any other position makes the right "placing"—or directing of the voice against the hard palate—difficult. The plan I advocate brings the mouth

and throat into positions relative to each other that are highly favourable to correct placing.

CORRECT OPENING OF THE MOUTH.

Ornithoparcus politely declared: "The uncomely gaping of the mouth, and ungraceful motion of the body, is the sign of a mad singer." Isaac Nathan, a pupil of Domenico Corri, wrote a learned work, called *Musurgia Vocalis*, wherein he made certain comments on mouth-opening which probably apply as much to-day as a century ago, when they were expressed. Nathan stated: "Opening the mouth to the fullest extent is by many persons considered the very acme of perfection; and the more persevering a master may be in distending that beautiful feature beyond nature's limits, the greater become his success and reputation as a profound and well-studied professor. Those pretty mouths, which at other times are watched with the anxiety of maternal vigilance, lest they should exceed the dimensions of a moderate sized button-hole, are suffered, under the all-commanding sway of the singing-master, to distend wide enough to admit a friend. . . . The exclamations of 'Open your mouth! hold up your head, let the voice come out!' are certain introductions to the pupil's good opinion—being considered the very ultimatum of vocal tuition." Nathan well pointed out that "Exclusive of external appearances, it is extremely disadvantageous to the voice to keep the mouth in so open a position; for the fleshy substance of the cheek must thus necessarily press against the teeth and deaden the sound, as a handkerchief or any kind of drapery would affect the tones of a violin, if it came in contact with the strings, while the performer was producing the notes. Further, it is not difficult to imagine, that when the mouth is so absurdly opened, the concavity of the throat becomes proportionably contracted, and the muscular instruments of sound lose their power of action in an equal ratio; a circumstance abundantly borne out by the evidence of

anatomy. . . . From the reduced capacity of the vocal organs, when so ridiculously gaping for sound, it is evident that soft tones lose their sweetness, and that those intended to be loud meet with obstruction. The happy medium in all things is generally least attended to, and to avoid what may appear ridiculous in others, many fall into an opposite extreme, and keep their mouths nearly closed; by which means they mince and eat their words without mercy, and conceal what little voice nature may have given to them."

The "happy medium" opening is about wide enough to admit the end of the first finger on edge between the teeth. That opening is suitable, except for special effects, for all the vowels, and can be advantageously maintained during the articulation of certain consonantal sounds.

As to the lips, a smiling position is often recommended; but as the expression of the face should conform to the sentiments conveyed by the words, it is obvious that the form of the lips requires some modification. *Werner's Voice Magazine* truly said: "It is interesting to note—such is the beautiful harmony of nature—that it is impossible to produce a sombre tone with a bright expression of face, for in order to hold the sound sufficiently inside, the mouth must be more closed than in the smiling position. Conversely, a joyous note cannot be perfectly vocalised with the countenance in the lines and form which express melancholy."

The effects of lip change on vowel sound will be dealt with later.

Unless demanded for the expression of emotions, there should be *no* distortion of the features. Puckering up the lips, somewhat like closing a grandmother's bag, inevitably tightens the throat and is correspondingly detrimental to vocal tone.

A good plan for getting ease of jaw movement is to imagine that in opening the mouth the upper jaw is the one that moves. Of course the only way of really

moving the upper jaw from the lower involves tilting the head backward, which, of course, is a position I have condemned.

For retaining the desired separation of the jaws, a bit of cork may be placed between the teeth; but the fact should be borne in mind that that artifice must be replaced by right assumption—upon which I almost exclusively rely with pupils.

THE INSIDE OF THE MOUTH.

The tongue, except when required in the consonantal sounds *k* and *g*, should lie, with the exception of its tip, flat, or even hollowed, in the mouth, for otherwise a vitiated, throaty tone is present. The ideal position and sensation for voice may be ascertained by yawning in front of a mirror: the root of the tongue is depressed, the pillars of the fauces are kept well apart, and the soft palate is elevated, thereby cutting off communication with the nasal cavities.

The fact should be emphasised here that trouble with the tongue is mainly the result of wrong laryngeal action or of laboured attempts to get what is, or is supposed to be, a right position. There are immense numbers of persons about who have been led into bad production by instructions regarding the position in which to place the tongue. Some teachers resort to a spatula to push the tongue down. The result is like the holding of a struggling man on the ground, compared with the relaxation of an insensible person.

It does not follow that, inasmuch as a person can get relaxation of the tongue, his larynx acts rightly; for instance, his tone may be breathy. But when bunching up of the back of the tongue is the kind of resistance resorted to, getting relaxation of the tongue takes away the crutch and—speaking figuratively—the false cords may then be able to walk or stand where required.

POSITION OF THE LARYNX.

There are teachers and writers who declare that the larynx should retain a high position in the neck, others a low; there are also those who declare that it should invariably move upward when pitch is raised, and those that it should invariably take the opposite movement, and so on. All those opinions are demonstrably due to superficial observation and judgment. In reality the position of the larynx is variable, depending upon a number of ascertainable causes. Here are some relevant tests:—

(1) Put a finger upon your larynx and think a bright thought—smile! The larynx simultaneously rises slightly.

(2) Think a sad thought—which, of course, is accompanied by a drooping of the ends of the lips. The larynx simultaneously falls.

(3) Assume a dignified and serious (but not sad) frame of mind. The lips and larynx assume a medium position.

The same general rules apply to voice, though pitch affects the matter to some extent.

OPEN, COVERED, AND CENTRAL TONE.

As previously mentioned, the larynx, epiglottis and tongue ordinarily synchronise in action, so that the lower the larynx the more backward is the placing of a note, and the higher the larynx the more forward the placing. It therefore transpires that a bright tone has a forward placing, a dignified tone a medium placing, and a sombre tone a comparatively backward placing. In any case a good note is not placed either so forward or so backward as not to impinge upon the hard palate.

The predominant character of vocal tones results from the multiplying and amplifying influence of the cavities mainly requisitioned.

A tone placed well forward in the mouth is comparatively light because it takes its colour principally

from the mouth. It constitutes what the Italians speak of as " fior' di labbro " (" flower of lip ") singing.

A tone impinging upon the centre of the hard palate is characteristically coloured by the mouth, nasal cavities, and upper throat. This placing has the finest carrying quality of any, and being particularly full and ringing, should be employed most in exercises. It is sometimes called " central tone."

A tone placed well back on the hard palate gets its distinctive colour from the low cavities.

A forward tone is sometimes described as " open," and a backward one as " closed " or " covered." The openness or covering may be merely comparative, a single note being sometimes described as " more open " or " more covered " than another.

The student must beware of confounding open and closed placings with the open and closed registers.

THROATINESS.

It is possible for a note to be produced rightly at the larynx and yet have its quality injured through mismanagement of parts above the larynx.

The old Italian masters realised that throatiness is almost always connected with mismanagement of the breath. The peculiar quality of tone called " throaty " is caused by stiffening the base of the tongue, thereby raising the larynx very high and depressing the epiglottis so that the voice sounds choked. Such quality may be effective as the expression of affectation—or strangulation, but for no other purpose. Tosi describes throatiness and nasal twang (of which more anon) as " two of the most horrible defects in the singer," wherein he was doubtless right, though not in his next statement that they are " past all remedy if once grown into a habit."

Throatiness and nasal twang are often united inasmuch as the same muscular contraction at the back of

the mouth draws the attached parts upward and downward respectively.

ARTISTIC BAD PRODUCTION.

An artiste, for special purposes, uses what is not, strictly speaking, good production. If, for example, a tone of disdain is required, a forward placing is combined with tightening of the genio-hyoid muscles—under the chin. Again in getting a sneering effect, breath may pass *through* the nasal passages.

NASAL TWANG AND NASAL RESONANCE.

These should be carefully distinguished: in nasal twang, breath passes outwards through the nose; whereas, in nasal resonance, the air in the cavities above the mouth is thrown into strong vibration by the voice being placed well in the dome of the mouth.

When M or N is sounded, the breath passes through the nostrils, and it may do so in part during the emission of vowel sounds—though it thereby interferes with their purity. As long ago as 1863 Passavant demonstrated the completeness of the closure of the posterior nares during the production of pure vowel sounds. By means of a small tube, he threw water to the extreme back of the nasal cavity during their emission. The injected water did not pass into the mouth until after the tone had terminated. In order to guard against the possibility of error, Passavant later injected milk instead of water, as thereby the entrance of even a minute quantity of the liquid could be observed. He thereby obtained corroborative evidence.

A. B. Bach, the teacher and singer, tested the closure by means of an instrument with which a skilful surgeon hermetically sealed the nasal passages. The power and beauty of the voice were not in the least interfered with by the closure. On the other hand, when part of the vocalised breath passes outward through the nostrils resonance is markedly injured.

VOCAL TOUCH.

One of the secrets of good singing, as of good playing, is correct "touch." "Attack" is the term usually applied to vocal touch, but the term is not apt; "attack" tends to instil the idea of violence, whereas at no time should the voice be strained in any way. A good singer always conveys the impression of having a considerable amount of power in reserve, though good vocal touch (just as good pianoforte touch) can produce a rounder and more telling tone than can any amount of hammering at notes.

Voice is originated in the larynx and nowhere else. Consonantal sounds result from the action of parts above the larynx. It is therefore obvious that when the action at the larynx is wrong, no employment of consonants can put it right. To get good vocal touch, then, the laryngeal action is the first to which one must attend; and one should preferably employ for the purpose that sound in which the interior of the mouth is unmoulded, represented by the Italian *a* (like the "a" in "father").

HOLDING AND COMPRESSING THE BREATH.

Having properly poised the body (which in itself conduces to self-confidence) and taken (in Domenico Corri's words) "as much breath as you can," you hold the breath, preparatory to applying compression. The fact cannot be too strongly emphasised that the closure at the false cords, prior to breath compression, is not, and cannot be, performed by local effort. In examining the throat by means of the laryngoscope, the false cords are seen to come together directly there is the desire, *accompanied by confidence regarding the result*, to hold the breath. The student should bear in mind that the closure occurs commonly when one wishes to make a vigorous blow or lift a heavy weight, in which cases (as before remarked) one also compresses the breath by making such an action as would expel some of it were

the false cords apart. That action consists in drawing in the abdomen still further, so tending to pull downward the ribs, and slightly to push upward the centre of the diaphragm; thus lessening the actual space in the chest.

Gases when compressed exert equal force in all directions. The result of the compression of the breath in the way described causes a bulging of the chest walls, bronchial tubes and trachea (especially of their softer portions), and of the ventricles of Morgagni and the adjacent pouches. At every part around the compressed air the resistance is equal, and where the walls of the chest are least strong they yield most to the pressure exerted by the compressed air, viz., at the free ribs.

At the conclusion of the act of inspiration, the raised ribs and the lowered diaphragm are both concerned with the expansion of the chest; but directly the held breath has been compressed by increased retraction of the abdomen, the chest is expanded more than it would be by the mere *holding* (without compression) of the amount of breath inspired. In other words: *the abdominal muscles and the diaphragm are converted into expulsive or motor agents, and the expanded chest into a resisting force.*

POISE IN READINESS.

Think the note (preferably about the middle of the voice) that you desire to sing, and feel as if you are *holding* it back. This thought gets the true cords stretched to the required extent whilst the false cords are in contact. The chest should not feel constrained but buoyant, and the essential tension at the throat should be unfelt—indeed, one should feel as if the neck were annihilated, as if there were nothing between the mouth and the lungs. An adage of the old masters asserted "L'Italiano non ha gola" ("The Italian has no throat").

Mme. Galli Curci is reported as having said to an interviewer: "Anything that causes you to contract muscles is the enemy of good singing. Look at the canary on its perch warbling for dear life. The ease of its production should be a lesson. Looseness—loose shoulders, arms, and chest as well as throat—that is my first principle." Her statement is not literally true. Birds have two larynxes, the upper of which corresponds to our false cords. As to looseness, that is merely a sensation—a result of rightly directed and proportioned muscular action. A bad singer, through not having muscular tension where he should, has it where he should not, *i.e.*, where he ought to have relaxation, and he is *made* conscious of *that* tension.

Though in re-setting the voice, attention is necessary to lips, tongue, soft palate, larynx, chest and abdomen, eventually these should respond to the emotions of the vocalist—should not be locally controlled.

For mental as well as physical reasons, a fairly bright tone is the best with which to begin.

But the student should observe that it is by *assumption* that the larynx is prepared for the emission of a given note, not by *local effort*.

As regards the *ah* that is sung, it depends upon the mood of the singer, and, conversely, the mood of the singer is affected by lowering the larynx—a useful expedient sometimes, but one nevertheless the product of assumption.

When the body is properly poised for the required note, the true cords are slightly pushed upward a little above the position required for the note to be produced. They are stretched in readiness for sound, but cannot sound, for there is no current of air to set them in motion.

When you poise physically, you should poise mentally too. In conformity with what was said about the psychical advantage of holding a breath, you should poise in readiness to actualise a mental conception. In

learning to write, straight strokes precede pothooks. Your first note should be a straight stroke of sound. Your physical attitude conduces to confidence regarding the projected attempt.

TOUCH AND—STAY.

Permit the note you have been holding back by closure at the false cords to sound. This permission consists in slightly separating the false cords, an action followed by a liberation of breath, which breath causes the true vocal cords to vibrate.

There is a tendency in most persons, through habit, to separation of the false cords, in which case the desirable continued downward pressure of air (through inflation of the ventricles) cannot occur. The ventricles then collapse, the chest tends to fall, the sense of possession is lost, and the voice becomes breathy, tremulous, throaty, or otherwise disfigured.

Unless the continuation of a note be good, the touch stands out crudely, and sometimes is condemned in place of the feeble continuation which ought to be condemned. When a note is sung correctly, it is equally good throughout—control being present at the beginning, in the middle, and at the end.

The ending of a note is as important as the beginning of it. Do not close the mouth, nor allow the chest to collapse; merely hold the breath *completely*, taking care that there be no *tightness felt* at the throat.

Before, throughout, and after the close, of the note, the chest should be supported. Before the note, you perform what may be likened to raising your chest on to a pedestal. Do not take it down except to take a fresh breath.

Many persons err in that they try to *make* the note start. That is unnecessary and self-defeating, for, if properly prepared, they have it already. A comparison given by Charles Lunn is apt. Close your eyelids, then decide to see. Your eyelids open. Decide not to see,

and the eyelids close again. Similarly, get everything ready for voice except the opening of the false cords, which opening should allow sufficient breath—but no more—to pass to cause vibration of the true cords. Allow the note to commence, then decide that it shall stop, not by letting go the hold you have had on the note, but by stopping the breath-escape.

Charles Santley aptly described the first note that should be attempted by a student as "of equal power throughout, without the slightest shock at the beginning or end; in fact, forming a perfect, solid rectangle of sound." Such notes, Sir Morell Mackenzie described as "the foundation of vocal discipline."

THE "COUP DE LA GLOTTE."

The advocated method of commencing a vowel sound constitutes what was most unfortunately termed by Señor Manuel Garcia (II.) the *coup de la glotte*, for the word *coup* when translated as "stroke" is misleading, and when (as commonly occurs) as "shock"—execrable. Unfortunately Manuel Garcia's "physiological" explanation is faulty, and that has added to the confusion as regards what really constitutes the *coup de la glotte*. One writer says it is a kind of jolt or hiccough; by many it is compared, or declared to be identical, with a slight cough; and still others imagine it to be connected with the energetic pronunciation of consonants. Near the end of his life Manuel Garcia gave this explanation in a letter he wrote to Charles Lunn: "I do insist on the attack; but it must be the delicate, precise action of the glottis, not the brutal pushing of the breath that goes by that name, fit only to tear the glottis, not to rectify and regulate its movements. The attack or stroke of the glottis is not an invention, it is a fact in nature. In the series of explosions constituting a sound, the initial explosion, the first is the one that I designate by the name 'stroke of the glottis.' (My merit or demerit consists in having noticed it and giving it a

name. No one who starts the voice properly can eschew it.) I distinguish the first explosion from the others because, as it starts the sound, its qualities or defects are impressed upon the emission." Madame Mathilde Marchesi wrote: "The pupil must understand that the 'coup de glotte' is a normal movement of his vocal organ and that he must simply submit to a spontaneous action." Indeed, in Manuel Garcia's words, "the stroke of the glottis is the only way of getting the notes purely and without bungling."

Nevertheless, through need of a thorough grasp of the true underlying principles of the action, there are teachers who, though they themselves use, are unable to impart the knack to a considerable proportion of their pupils. Many of these substitute that spurious (and hurtful) "coup de glotte" called by Garcia "the stroke of the chest"—which attack is often, from ignorance, taught. It is similar to coughing or the attempt to expel from the throat some obstruction, and makes the sounds aspirated, choked, and uncertain.

DOWNWARD PRESSURE.

The direction "Throw your voice out" is very common among teachers of singing, but is radically bad. The pupil is thereby led to imagine that his or her thought should be directed "outwards," the exact opposite of the truth. The teacher wishes the pupil to get a "forward" production, *i.e.*, he wishes him to feel a strong vibration at the front of the mouth.

It should always be borne in mind that, although the pressure upon the compressed breath is exerted and varied from below, such compression would be impracticable but for the false cords and ventricles. The false cords slanting downward, when they are quite or nearly together, the greater the pressure from below the more the ventricles and pouches are inflated, and the greater is the downward pressure of air. One result is that only a very small quantity of air passes outward, but it is

under great pressure. This may be likened to almost entire closure, with a finger and thumb, of the end of a rubber water-hose. A little water thus "goes a long way"; and, similarly, when the false cords are functioning properly, so does a little air.

But not only is the expansibility of the ventricles varied in accordance with the upward pressure of breath, the whole of the chest is similarly affected. Never tolerate, still less attempt, increasing the pressure of breath by lowering the upper part of the chest. The old Italian masters told their pupils "to support the voice" ("appoggiare la voce"). An old Italian sopranist, Crescentino, asserted: "The art of singing is looseness of the neck, and the voice above the breath."

If the pressure exerted from below be continuous, and yet the chest collapse, the explanation is that the false cords have come too far apart. How can that contingency be averted?

You will recollect that there is an upward as well as a downward pressure, due to the expansion of the ventricles. The state of things when voice is properly produced may be compared to pressing an indiarubber between a finger and thumb, the rubber representing the (elastic) breath, and the digits the diaphragm and the false cords. The psychological equivalent of this balance of forces is a feeling, even during the singing of a powerful note, as if the vocalist were not letting out breath, but taking it in. When the voice is wrongly produced, there necessarily is a feeling of lost control or of control that is physically uncomfortable or even painful.

If you desire to straighten a bent sheet of music, you roll it the reverse way. Similarly with the voice, *purposely assume the feeling* of taking in the breath: you thereby overcome the contrary habit of thought. Eventually, the required feeling becomes automatic, and correct production of voice becomes so fixed that you

may even have difficulty in repeating your old, wrong way of thinking and singing.

REMEMBER—

That a sensation of strain is the psychological equivalent of wrongly-directed or excessive body-activity;

That the right way of performing a physical action is always the easy way; and

That a properly-produced note not only feels easy to oneself, but looks and sounds easy to others.

CHAPTER X

THE "REGISTERS" OF VOICE.

"'Tis not a lip, or eye, we beauty call,
But the joint force and full result of all."—POPE.

WHAT A REGISTER IS.

IN all untrained voices distinct changes of quality are observable at certain points commonly called "breaks." Long ago these changes of quality reminded voice culturists of the registers, or stops, of a pipe-organ, and thus the word "register" was employed in connection with the voice. Unfortunately, physiological observation was superficial and the ear and sensations were relied upon to an altogether unwarranted extent as guides. Thus have arisen such extraordinary views as that certain singers produce all their notes by precisely the same mechanism, whereas others employ as many, perhaps, as five different registers; that the upper part of a man's voice is produced on the same mechanical principle as the lower part of a woman's; and so on. In point of fact the changes of quality are the result of secondary causes, affecting resonance, and one of the aims of voice cultivation is to assimilate the quality throughout the compass. The question of quality as regards the differentiation of registers is therefore insecure in any but untrained or incompetently-trained voices. If you put a finger upon "Adam's apple" and then move it downward, you come to the crico-thyroid space. If you then sing a low note of moderate power you find the space well open, but as you sing upward and with the same power, you find that the space gradually closes

from note to note. If the ascent be continued past a point, however, the space suddenly becomes bigger, to be progressively decreased as before. Two main divisions in accordance with mechanism are thus pointed out, divisions containing something tangible that may be turned to good account by teachers, and which can give some safety to a student's private practice. These divisions will be called respectively "the *open* register" and "the *closed* register."

THE OPEN REGISTER.

In this the whole length of the cords vibrates. The mere bringing into contact of the anterior corners of the arytænoid cartilages by shortening of the lateral crico-arytænoid muscles is sufficient for the production of voice. The note thus produced, of course slightly varies in accordance with the breath-pressure, and much in different voices, sometimes being as low as middle D, at other times as high as middle A. This refers to female voices, adult male voices change about an octave lower.

At the note referred to, which is sometimes termed "the note of approximation," sometimes "the station note," sometimes "the normal note," the tension of the crico-thyroid and thyro-arytænoid is equal. When the crico-thyroid muscles shorten, and provided the breath pressure be uniform, pitch is raised; when the thyro-arytænoid muscles shorten, pitch is lowered. By the added stretching of the cords, about eight semitones can be produced; by the reduction of stretching, rather more. In any voice the lowest notes producible with the full length of cords are necessarily weak compared with those a little higher, and the highest notes so produced are necessarily loud. That is so inasmuch as pitch is the product of cord tension plus breath pressure. To increase power we increase breath pressure and lessen cord tension: to decrease power we increase cord tension because we lessen breath pressure.

THE "CLOSED" REGISTER.

When the vibrating portion of the cords is lessened, pitch is proportionately raised, as with violin strings.

The characteristic overlapping of the cords is partly brought about by the shortening of the transverse arytænoid muscle which intensifies the effect of the lateral crico-arytænoid muscles by pressing the faces of the arytænoid cartilages closer together. Also the inferior constrictors of the pharynx being attached to the extreme outer edges of the thyroid cartilage, take part in the overlapping referred to. By making the wings of the thyroid cartilage approach each other, it is they that press together the *anterior* portions of the vocal cords. This action may be imitated and pitch raised by pinching, on both sides simultaneously, between a finger and thumb, the back part of the thyroid cartilage.

With the same pressure of air and opening of the crico-thyroid space we can produce either a mezzo-forte note with the full length of cords or an octave higher softly with shortened cords. It is, therefore, palpable that the potential compass of a voice extends to at least one octave beyond the highest note of the open register, *i.e.*, until the crico-thyroid space is closed. It can indeed extend higher, for the overlapping can be increased.

Extreme overlapping, and consequent limitation of the vibrating breadth, of the cords is characteristic of "falsetto," *i.e.*, illegitimate voice. Falsetto notes do not admit of much variation in power. They may, however, by good method and practice be converted into legitimate voice, *i.e.*, they may become expansible and suitable for the expression of emotions.

Closed notes obviously extend downward to within an octave of the lowest notes of the open register.

Power being increased by breath pressure, it is obvious that when a note started in the closed register is swelled the overlapping of the cords is diminished or even done away with entirely.

THE POTENTIAL VOCAL COMPASS.

I would emphasise the point at once that from the analysis here made it is obvious that voices potentially have much greater compass than is usually supposed, three octaves of notes being quite ordinary. The causes of short compass, as I shall show later, are mainly mental.

CHAPTER XI

THE CLASSIFICATION OF VOICES.

"Many of our best tenors first sang in public as baritones, which is perhaps why they became singers of distinction."—SIR HENRY WOOD.

NOTABLE DIAGNOSTIC ERRORS.

THE statement is often made that the first thing a singing master should do when called upon to cultivate a voice is to decide as to its species. That procedure is often productive of most serious mischief. Even when not fatal as regards the voice itself, the notable instances on record of persons who have narrowly missed passing their lives in comparative obscurity owing to wrong diagnoses are ominous. Christine Nilsson was originally trained as a contralto instead of as a soprano. The great tenors Mario, Sims Reeves and Jean de Reszke were originally trained as baritones. In the case of the great French baritone Faure the opposite mistake was made; and Lablache, the great French bass, sang publicly as a tenor and then as a baritone. Santley, before finally deciding upon baritone, sang as a tenor and a bass.

QUALITY THE DETERMINING FACTOR.

In the diagnosis of a voice, quality rather than pitch should be the deciding feature. Occasionally a voice of baritone quality has the usual compass of an ordinary tenor, a tenor that of an ordinary baritone, and so on. Not infrequently one comes across two voices which at the commencement of training have precisely the same compass though they are of different species.

PHYSIOLOGICAL SIGNS.

With tolerable correctness, one may proclaim the species of a voice by observing the position which the larynx occupies in the throat. The greater the distance between the hyoid bone and the upper horns of the thyroid cartilage, the bigger is likely to be the resonating space between the vocal cords and the roof of the mouth, consequently the heavier is the voice. In other words, the weight of the voice mainly depends upon the capacity of the pharynx. Upon that point more reliance can safely be placed than upon laryngoscopic examination of the vocal cords. For example, a tenor's vocal cords may, and not infrequently do, exceed in size those of a baritone: Caruso's vocal cords were well over one-sixth of an inch longer than those of the vast majority of tenors.

SPECIES OF VOICE ARTIFICIAL.

It should ever be remembered that Nature's changes are gradual. Just as between sanity and insanity, stupidity and imbecility, sleeping and waking, the colours of a rainbow, so between the various "species of voice" no definite lines of demarcation can be drawn. The classification of voices is indeed purely artificial, being a number of divisions made for musical purposes. Though for chorus work four divisions (treble, alto, tenor and bass) often suffice, such a classification is far from adequate for solo work, suitability for certain purposes and modes of rendition having to be taken into account.

The generality of voices are of sufficiently pronounced character to admit of rules being laid down by which in most instances the species of voice may be ascertained without difficulty—if not immediately upon commencing training, a little later.

MOTHER NATURE AS ADJUDICATOR.

To leave the decision as to the nature of a voice

open is unusual, but nevertheless it is the wise course whenever there is any doubt about the matter. In deciding as to species we have as before-mentioned to be guided by quality; but the true quality of a voice is what it sounds like when properly produced. Much, sometimes irreparable, harm resulting from forming a too hasty judgment, the safest and best course is to procure correct conditions in the singing of an octave or so of notes about the middle of the available compass. Diagnosis is thus made easy, except of voices lying about midway between—say an indisputable tenor and an indisputable baritone.

FEMALE VOICES.

Suppose one has to decide as to the species of a certain female voice. It may be a soprano, or contralto, or may lie between the two—may be a mezzo-soprano or a mezzo-contralto. One will do well to ask the person to sing up and then down the scale of C.* If the notes below G are thin but above C′ bright and silvery, the voice is a soprano; if there is a peculiarly masculine character from D downward, a contralto. If the masculine character is absent, but the notes from C to G are very round, test F′, G′ and A′. If the F′ stand out more than the G′ and A′ the voice is in all likelihood a mezzo-soprano; if the G′ and A′ a soprano. Had the voice been contralto, D′ would have been a characteristic note, and probably there would have been a weakness immediately above D or E.

A distinction other than that mentioned between soprano and mezzo-soprano is that when the clear timbre of the high notes is being used, in a soprano the voice sounds rather shrill than metallic, but in a mezzo-soprano rather metallic than shrill. But a voice may be full throughout its extent and capable of much

* From middle C to the B above (inclusive) is unstroked. C′ is an octave above middle C, C_1 an octave below,—and so on.

flexibility, in which case it is classed as a soprano drammatico. If on the other hand, it is light, bright, and agile, but not very flexible, it is a soprano leggiero.

The pure contralto is rarely met with. The majority of persons who sing the part have mezzo-contralto voices, but such voices can often sing mezzo-soprano parts with equal ease. The mezzo-contralto is less bright in quality than the mezzo-soprano, and less sonorous on the low notes than is the pure contralto.

BOYS' VOICES.

These correspond to the voices of females. The lowest species should be called "alto," not "contralto." The part sung by contralti was originally sung by males or eunuchs, and when a low female voice was substituted it was called a "contra-alto," which was shortened to "contralto."

FALSETTO.

This name is applied to a bass or baritone who is feigning a female tone, and probably "singing alto." The change is brought about mainly by extreme overlapping of the cords, the vibrations of which are consequently confined almost entirely to their extreme edges.

MEN'S VOICES.

Suppose the voice to be diagnosed is a man's. One may ask the person to sing from $C_{,}$ to C upward and downward. If the voice is progressively richer on the lower notes, it is probably bass. Continue the descent, and if below $A_{,,}$ the notes are full, that is another point in favour of the decision. But test B and the notes immediately above it, which in pronounced bass and baritone voices are rather hollow in quality. If the notes from $E_{,}$ to $A_{,,}$ are much fuller than those below, the voice is either a baritone or a basso-cantante,—it is not a basso-profondo, which is about as rare as a pure

contralto. In bass voices, C, despite its hollowness, is usually a fine note, with baritones D. The baritone is brighter and more agile than the basso-cantante.

A nice point of distinction is that between a baritone and a tenore robusto, or full-voiced tenor. During an interview Sims Reeves once remarked: "If a tenor has a good, strong, middle voice he is now called a baritone. I think I may claim to be a tenor, yet I used to be called a baritone at first, because I had preserved this part of my voice fresh and strong."

The high notes of the tenore robusto are often late in coming, and it is very difficult, if not impossible, to decide regarding some immature voices whether they will ultimately become tenor or baritone.

Probably the best means of ascertaining whether a voice is a tenore robusto or a baritone is by observation of the notes above A_1. Those of a tenore robusto are usually not so full as those of a baritone, but they do not sound hollow. Perhaps one may well describe the upper notes of a baritone as "concave," those of a robust tenor as "convex." The notes above F when well-developed are very brilliant in the tenore robusto. In the baritone, D, though a very fine note, has a characteristic slight hollowness. The tenore robusto, which term is now practically synonymous with "tenore di forza," is capable of great flexibility, and is, therefore, well suited for declamatory music.

The tenore leggiero is generally more agile than the tenore robusto. Its effects have to be gained by grace rather than by force. Suavity is often a very effective substitute for passion. The notes above F when properly produced by a tenore leggiero are bright and silvery, whilst below E, they are seldom effective. High soft notes in a robust tenor are flute-like and differ from those of the tenore leggiero in that they give no suggestion of femininity.

Between the tenore robusto and the tenore leggiero lies the tenore di mezzo caratere, which partakes in

varying degrees of the qualities of the two extreme species.

REGISTER CHANGES.

When the voices have assumed their proper qualities, a certain consistency is present as regards limits of register. Although no hard and fast rules can be laid down—voices differing as widely as faces—one may say that in mezzo-forte singing, the available notes of the open register terminate in tenors on D, D ♯, or E; in baritones on C, and in basses on B, or B♭. Soprani, mezzo-soprani, mezzo-contralti and contralti respectively close about an octave above their male counterparts.

By noting the usual inequalities in the various kinds of voices, it is not intended to imply that such peculiarities should be looked upon as unavoidable evils. The species of voice established, an important duty is the smoothing over of irregularities of quality so that the component parts of the voice eventually form one beautiful whole. In this assimilation, the recognition and utilisation of the knowledge of register changes is a great, almost indispensable aid.

CHAPTER XII

VOICE DEVELOPMENT.

"Do not be in a hurry; the instrument should be built with exceedingly great care."—SIMS REEVES.

SHAPE OF VOICE.

It is important that as early as practicable the student should have a just ideal as regards shape of voice.

All the notes of a voice may be produced rightly as units and, nevertheless, the voice as a whole may be disjointed, just as all the wires of a pianoforte may be good but ill-assorted. No two notes in either a voice or a pianoforte can *really* be equal, but the effect of equality can be obtained in both instances by proportionate modifications of tone.

Many voices sound hollow on the low notes, but gradually become thin in ascending the open register, into which fits the closed register, thin throughout, especially on the high notes. This shape of voice may be represented thus: △. Some teachers, realising the fault in the low notes, go to the opposite extreme, telling their pupils to sing those notes as forward as possible and to get the higher open notes very full—which ideal may be represented thus: ▽. As a consequence the luckless pupil's compass, with anything like sonority, is contracted at the lower extremity, and an insuperable difficulty is found in blending the open with the closed register—which is usually thin and "watery," thus:

A low position of the larynx when producing a low note makes the tone dull and hollow: a high position of

the larynx in producing a high note makes the tone thin.

The voice should as nearly as possible resemble an oblong standing upon one of its short sides (▯). To get that effect the low notes must be roundened but lightened and the high notes must be covered.

In ascending a standard scale of equal power throughout, the larynx moves gradually downward, and in descending the same scale upward. If those movements be excessive or insufficient the scale is unequal.

As the pitch rises, the pharynx is progressively narrowed, thereby better reinforcing the tone as well as aiding in the closure at the true cords.

The shape of the voice has a strong bearing upon the question of vowel formation.

VOWEL SOUNDS INFINITE IN NUMBER.

Writing represents vowels by invariable signs; but the number of vowel sounds is infinite, depending upon the sentiment or passion being expressed, the pitch of the note sung or the inflection of speech, the physical conformation of the person by whom the sounds are produced, and so on.

It thus transpires that the Italian *a* (and, correspondingly, every other " vowel ") varies greatly. When the larynx is high the vowel is very different from when the larynx is low. If the parts concerned with the formation of the vowel retain the same position for a high note as for a low one of equal power the result sounds and, indeed, *is* a distortion—thin and unsatisfactory; if they retain the same position for a low note as a high note of equal power the tone is hollow and lifeless.

Some teachers advocate purposive alteration of vowel sounds in order to get favourable placing—for instance, " shall " is replaced by " sh*ah*ll." The right procedure is to attend to the *placing* of the voice, for the vowels are thus modified, but not distorted.

VOWEL INEQUALITY.

If a finger be placed on the larynx whilst the sounds *oo, oh, ah, ai* and *ee* are whispered, the organ is usually found to take a higher position for each succeeding vowel. That signifies that the vowel sounds mentioned become progressively more forward; and, if the same change take place in speech or song as in the whisper, the tone colour is made to depend upon the vowel which happens to be employed—which arrangement is palpably absurd.

As in morals, so in the pronunciation of vowels, one fault leads to another—*e.g.*, the raising of the larynx for *ee* making the sound thin, pupils are sometimes told to pout their lips, and then they produce an *oo* and *ee* combined, a sound not found in the English language. For some vowels the mouth is made to gape ridiculously, for others to close excessively. No wonder one hears that certain vowels are difficult. Many, many hours are spent in the fruitless endeavour to equalise them. Yet, all vowels are easy when properly sung, and the way to equalise them is simplicity itself.

VOWEL EQUALISATION.

If you have *ah* produced rightly, you may produce any other vowel sound *without moving either the jaws or larynx*, in which case the voice impinges on exactly the same part of the hard palate, whatever the vowel. If the sounds would ordinarily be thinner than *ah* (*e.g.*, *ai* and *ee*) make the necessary changes by raising *the tip* of the tongue and without moving the lips. If the sounds would ordinarily be more sombre than *ah* (*e.g.*, *oh* and *oo*) make the change by roundening the lips (thus narrowing the aperture), but do not move the tongue. Be careful not to "pucker up" the lips, thereby hiding all the teeth, and spoiling the tone by smothering the voice and contracting the throat.

Each of the two sounds of which a diphthong is composed follows the rule I give as to vowel-formation. In singing English the first sound in every diphthong but *u* should form the bulk of the note.

In teaching the deaf to speak, the sense of touch is utilised. If a hand be placed on the top of the head, a vibration depending mainly upon the placing is felt there—ordinarily least for *oo* and most for *ee*. From the artistic standpoint there should be only slight changes in that sympathetic vibration, and the student has therein a good guide as to vowel equality.

POWER.

An Italian maxim runs: "Cerca la qualita, la quantita verrà" ("Seek quality, quantity will come"). That does not say, as many persons do, "sing *softly*, and power will come," which in no case is a safe principle on which to study. Tosi well observed: "Let the master instruct him" (the pupil) "in the *forte* and *piano*, but so as to use him more to the first than the second, it being easier to make one sing softly than loudly. Experience shows that the *piano* is not to be relied upon, since it is prejudicial though pleasing; and if anyone has a mind to lose his voice, let him try it."

Sir Morell Mackenzie, after condemning the substitution of soft for loud singing (not shouting nor forcing), remarked: "In order to acquire the maximum power, physiology teaches us that the muscles must be regularly exercised for a short time at their full tension. According to tradition this was the invariable rule of the Italian *maestri*, so that it would appear that science, if not directly useful in teaching, has at least the merit of explaining what art had already discovered."

A DISPUTED POINT.

There has been, and still is, considerable difference of opinion as to the proper position of "the swell" in

voice culture. Contrary to what is often asserted, an examination of the writings extant suffices to show that there was not uniformity on this point among the old Italian maestri.

"Masters are now almost agreed," said R. M. Bacon (in 1824), "that the most successful method is to sing the notes of the diatonic scale throughout the entire compass of the voice upon the syllable *a* or *ah*, as it is pronounced in the word *father* or *far*. Each note should be begun as soft as possible—gradually swelled to the utmost extent of the volume at the middle of its duration, and then as gradually diminished to the softest, at its conclusion." But in a footnote Bacon added: "This is what the Italians term *messa di voce*, which Tosi calls a grace, and says it ought not to be too frequently used. I knew one very excellent teacher of public singers, who on the contrary desired his scholars to begin with any given quantity of tone, and to preserve the same quantity evenly throughout. His reason was that by this practice the scholar would acquire the power of producing any desired quantity at pleasure, and there appears to be some force in the remark. Others make the scholar sing the notes fortissimo, forte, and piano successively, in order to confer the power of producing any given quantity of tone."

Adolfo Ferrari stated that one "general error in the commencement of singing is to direct the pupil to begin the sound *piano* and make a crescendo upon it; this" (he added) "causes the pupil to force the breath and thrust it forward, veiling the sound and causing the chest to collapse. By pursuing such a method the voice, instead of developing, becomes weak and husky; and the pupils never obtain sufficient mastery of breath to be able to sustain the sound firmly, even after years of practice. In fact, the more they practice the more distant they are from obtaining a firm intonation."

I do not concur with the statement of Ferrari that the effect of commencing with *crescendi* inevitably

defeats. Indeed, though I have found that result usual, I have known exceptions—in which instances (I should remark) right conception of breath-compression was inculcated, or the voice was particularly steady prior to training. Nevertheless, I consider that *crescendi* and *diminuendi* are *out of order* at the commencement of training, and that, even if mastered through clear explanation or chance self-culture, a considerable amount of time is needlessly spent in the process. When level tone is mastered, a standard is fixed from which one can readily learn to deviate properly when required.

HOW TO FIX A STANDARD TONE FIRMLY.

A sustained note of equal power may be soft throughout, or moderately loud, or loud, and so on. How should the first notes be practised in order to pave the way best for variations of power?

Properly produced voice being the result of *compressed* breath, the sustained notes should be of full (but easy) power throughout. There are various advantages:—

(1) They expand and gradually improve the structure of the ventricular pouches and the larynx generally, and also of the chest—the mobility of which they greatly increase;

(2) They cause growth of muscle;

(3) They cultivate endurance; and

(4) They fix the notes so that a loud tone becomes automatic and soft singing the result of restraining the automatic full compression.

The procedure here advocated has great artistic significances. Herbert Spencer remarked that though "volume of sound is a sign of mass of feeling, the loud tone expressive of strong feelings is not forced, but spontaneous—is due not to a voluntary, but an involuntary excitement of the vocal apparatus. Consequently," he said, "a singer's loud tone must be a loud tone not suggestive of effort: the muscular strain

required must be actually or apparently unconscious." Soft sound (Spencer might have added) often shows by its intensity how great a "mass of feeling" is being suppressed.

I have seen the statement made that soft singing is the only way of getting rid of throatiness and of vibrato. When the trouble has disappeared (it was significantly added) increase the power, but take great care, for otherwise the trouble will reappear. Why? I answer: Because under such conditions the *root*-cause of the throatiness or vibrato is unattacked. The temporary abatement of the trouble is because the need of resistance is lessened, and the anticipated recurrence is because of the approaching need of greater resistance. Nothing is really gained by the artifice to which I refer, for, as Sabilla Novello (in writing an account of the processes used by her sister Clara, the great mezzo-soprano) remarked: "Beautiful piano tones require as much full power, or command over the vocal instrument, for their production as do the loudest sounds."

The secret of a beautiful, telling *piano* or *pianissimo* is a round and ringing *forte;* and that is so because the organs improve in structure and thereby function better. Nevertheless, I hold that those teachers err who neglect *pianissimo* study. "If you can lift a hundredweight, you can lift a pound" is doubtless true, but used as an analogy in this connection (as it has been) I consider hardly to the point. Expressive pianissimo singing is an achievement of extreme nicety, and may be compared with gently touching with a razor. I deprecate continual soft singing, but I hold that those old Italian masters who advocated it for the sake of cultivating delicacy and refinement of song were right. Besides, soft singing is the opposite of loud, and the extremes encompass everything between.

CAUTIONS REGARDING FORTE AND PIANO.

However full and powerful a note be required, the

expenditure of breath should not be appreciably greater than that needed for a soft note. That is so because when the false cords are nearly in contact, the greater the pressure of breath the greater is the expansion of the ventricles and consequent downward pressure of compressed air against the upward-moving, narrowed stream of breath. Somewhat similarly a good player on a large wind instrument, such as the ophycleide or trombone, gets a full and powerful tone with no more expenditure of breath than would be needed for a soft note on the flute or fife.

All notes of the human voice should have the basis of compressed air. None should be soft through interference with the conditions of compression. A loud note needs *much* breath-compression, a soft sound *little*. When well-produced any and every note is associated with *some* breath-compression. Not until *after* the voice has ceased should one do away with the purposive contraction of the abdominal muscles. Moreover, even during half-breaths, the upper part of the chest should be kept expanded, and attention (until the action has become automatic) should be given to the expansion at the base of the chest and at the sternal angle.

FOUNDATION NOTES.

As a rule the low and medium notes of a voice should first be developed and the upper notes be left for a time. Occasionally, however, a voice has top notes approximately well produced and the rest of the voice badly. In that case time is saved by starting from the top and descending; but directly the lower notes can be produced rightly they should be the ones exercised most. Practice on the high notes at the expense or partial neglect of the lower, tends to spoil the middle notes and to render the voice thin throughout.

It is usually advisable to set one note about four tones from the bottom of the voice and then another note a few tones higher—one which requires some

obvious covering. Then work upwards and downwards. Extend the open register as high as is possible without its degenerating into a shout. The range and solidity of the closed register depend upon compliance with that rule.

TEST "POSSESSION" OF NOTES.

Two or more shortish notes followed by a long-drawn-out note, all at full power, form a most useful exercise as well as a test of action at the false cords. Care should be taken that during the intermediate rests air is neither inhaled nor exhaled. Unless the required closure take place at the false cords, entire prevention of inspiration or expiration during the intervals is almost impracticable, the slightest movement of the body causing an alteration in the chest cavity.

Should excessive tension occur at the throat, the student should inspire fully and, after holding the breath without compression and with a feeling of absolute ease at the throat, should carefully retain that feeling whilst further retracting the abdomen. The student thus realises that the required "grip" is an unfelt one.

The described test should be applied to notes sung *piano* as well as to those sung *forte*, and with the same placing (and consequently the same position of the larynx) in both instances.

Alternately sing a few notes *forte* and *piano*.

TEST GRADUAL POWER-VARIATION.

Having tested possession, test the capacity of varying power, but do not alter the placing—in effect, keep the larynx stationary. Begin each note *forte*, decrease to *piano*, and return to *forte*, thus: >< , ending each note as abruptly as you began it. A crescendo followed by a diminuendo is not a sufficient test, for the end of the note may be imperfectly produced and yet pass muster with beginners.

COMBINING NOTES.

Having mastered single notes, more than one note in a breath should be attempted.

I recommend the practice of two disconnected notes, a semitone apart and in one breath, ascending and descending, then the two notes joined without any slur. In very early study: *Slur not at all.*

The diatonic scale usually comes next in order as being a combination of semitones and tones. It should be sung very slowly and in two breaths. Thereby any inequalities remaining in the lower portions of the voice become evident; and they should be overcome, by attention to placing, before proceeding further.

Having mastered the diatonic scale, proceed to the notes of the common chord, which are best taken at first disconnected, but in a single breath, then connected. Then the four exercises "For Equalising Voice" (on the attached sheet of "Comprehensive Vocalism") may advantageously be at first practised to the limits of the open register, later throughout the vocal compass.

"MAKE HASTE SLOWLY."

A passage from Tosi is to the point. "The master," he stated, "should understand that a good voice improves if led to quick passages after being well practised on sustained notes, but if rapid passages be attempted before the organs have had time properly to adjust themselves, the voice sometimes becomes one of the very worst, to the great injury of the pupil—through the master's negligence."

BREATH MANAGEMENT IN ASCENDING AND DESCENDING PASSAGES.

The student should carefully analyse his bodily movements during ascending and descending passages.

With many persons ascent infers tightness, and descent flaccidity—instead of proportionate lessening of

tension; consequently their high notes are unsympathetic and their bottom ones breathy and hollow.

If in singing an ascending scale a weakness appears in producing the upper notes, the student must beware of tightening above the larynx, or of forcing in any way.

During an ascending passage of equal power throughout, the diaphragm and abdominal muscles should gradually increase the compressing of the breath and consequently add to the expansion of the chest. If the power is meant to decrease, less, or perhaps no, added elevation of the chest is required—indeed, in exceptional instances it needs to be lowered somewhat.

During a descending passage of equal power throughout, the diaphragm and abdominal muscles should slightly relax their pressure on the compressed air, and so allow the chest to fall slightly. There should be no purposive contraction nor flopping of the upper chest, nor should there be pushing forward of the abdomen. The action is somewhat like going downhill: one must hold back, as it were, so as not to overdo the lessening of tension. The consciousness of *control* must never be lost. When a descending passage is meant to increase in power (as is often the case in slow music) even an increased retraction of the abdomen may be necessary.

THE SECRET OF HIGH NOTES.

Many writers on voice obviously believe that increase in its compass is mainly dependent upon developing the parts by which it is produced. One must allow that right action of the voice-producing parts makes them better suited for their respective duties, greatly increases the strength and beauty of the voice—and to some extent its compass, but not to anything approaching the extent ordinarily supposed. The reason that the compass of a voice is apt to increase but slowly as a rule, is because a quick increase is not expected, or because measures employed

are unphysiological. By means of those I advocate, the vocal range usually increases immediately and to a marked extent. Often a person imagines himself or herself to have "no voice" and may at first emit no more than about an octave of notes, but when shown how to think aright may emit from two to three octaves.

It should not be concluded from the above considerations that persons should make a custom of singing continually at the extreme upper limit of the compass. A person may be capable of lifting a very heavy weight with ease and grace; but that fact does not show that he may therefore carry it a mile. The best effects are produced by confining the bulk of practice to the central portion of the voice, avoiding much practice of the extremes. Indeed, I would repeat that too much practice of the top notes tends to weaken the middle ones and to spoil the voice as a whole.

Please to bear in mind that, however good the middle notes of a voice may happen to be, when a person thinks the upper ones are beyond his or her compass, they are so for the time being; and if, whilst holding that conviction, the attempt be made to sing them, the greater the attendant strain, the more pronounced is the failure, obstacles being interposed or increased.

Not infrequently, straining causes a crack in the voice (*scrocchi di voce*). At high pitches considerable, though easy, contraction of the glottis is requisite, and should the true cords press together throughout for a moment, their closure is followed by a sudden opening, and the production thereby of a note of unintended pitch. Inflammation, however slight—as during a cold—increases the likelihood of this calamity.

Any and every capability is lessened if straining be resorted to. It is with sight, for instance, as with voice. As I pointed out many years ago, the immediate "cures" of supposed myopia are explainable by the effects of strain and ease; and, *in Rational Hypnotism,*

I described a simple mode of exercise for improving sight. "Put a book" (I wrote) "just as near to the eyes as ordinarily to cause a slight strain; but don't strain—*imagine* the book further away. In like manner, put the book at an apparently excessive distance for reading. Again, don't strain—*imagine* the book nearer." Now, just as you think of the book as moving the opposite way from what it does in reality, you should at first think of high notes as low, and of low notes as high. Eventually, *all* notes feel as if on a level.

The raising of the pitch one semitone necessitates no more than one-hundredth of an inch added tension or overlapping. The absurdity of the habit of opening the mouth widely, and also of straining, in order to sing top notes is therefore clear.

High notes, when properly produced, are unaccompanied by strain of any kind. There should be no gripping under the chin, but a sense of fulness, of expansibility, should be experienced at the back of the mouth. The student should carefully avoid employing any jolt when beginning a high note: in every part of the voice, the tone should be thought of, prepared for, and *allowed* to commence.

THE REGISTERS AND THE CRICO-THYROID SPACE.

When the open register is extended and equalised as indicated, the student is ready to progress to the practical study and development of the closed register.

During the ascent of the open register the crico-thyroid space gradually closes. That closure should be carefully noted by the student, who has to repeat it an octave higher—as explained in the chapter on *Registers of Voice*.

Some persons make the second closure too pronounced; but that tendency can be overcome readily. You can cause the muscular actions necessary to bringing about the separation of the cricoid from the thyroid in precisely the same way that you can move one of

your hands from a shoulder, viz., by *assuming* (*i.e.*, by imagining as happening) what you desire. Steady holding of that idea brings into play the neuro-muscular mechanism necessary for its actualisation.

THE MASTERY OF THE CLOSED REGISTER.

The student should sing *forte* a note situated less than an octave below the highest available note of the open register, then, whilst keeping the same degree of compression, the same position of the larynx, and the same opening of the crico-thyroid space, he should sing a note an octave higher, which note, if the prescribed conditions are complied with, is *light* and *piano*. As the crico-thyroid space has not narrowed, the tension of the cords is the same, but they have overlapped at their extremities. The larynx having remained stationary, the placing of the two notes, though they are an octave apart, is identical, and, therefore, they cannot both form part of a scale of equal quality—any more than of power—throughout; though, of course, if the lower notes of a scale be very light the light closed note may form part of *it*.

The knack of singing top notes easily having been acquired, the next point is to increase the fulness and power of the closed register. For increasing the *fulness* the larynx is lowered and, consequently, the tone is covered: for increasing the *power*, breath-pressure is increased and, consequently, the tension of the true cords is lessened—as evidenced by widening of the crico-thyroid space.

Thinking of the position where one desires that the voice shall strike the hard palate is useful to assist in placing. Another expedient is to think "*oo*," whilst keeping the lips in the position for *ah*. The artifice is useful inasmuch as, the lips being purposely kept unroundened, the old neuro-muscular mechanism for *oo* is brought into play as far as practicable—the larynx falling.

Sims Reeves wrote: "The tones in the head register vibrate, especially at the bridge of the nose, and the highest notes convey a sensation as of an electric thrill in the head." Such a description, and many similar ones, surely demonstrate, by their diversity and ambiguity, the need of tangible guides and tests in attempts at voice culture.

BLENDING THE REGISTERS.

The intimate blending of the registers is a task requiring extreme nicety of adjustment and, therefore, considerable discrimination on the part of the student.

If blending of the registers sung *forte* be accomplished, blending of lesser degrees of power presents no difficulty—but the student has to bear in mind that pitch, being the product of breath-pressure and cord-tension combined, it is imperative that the open register be not carried so high when sung piano as is practicable when sung forte. The imperative change lies about a semitone lower for *piano* than for *mezzo-voce* and a semitone lower for *mezzo-voce* than for *forte*. There is a tendency to keep to a newly-entered register as long as possible; indeed the direction is often given to change from the open to the closed register high up in ascending and into the low register low down in descending. Up to the present I have never known the change of register to be concealed by that means. On the contrary, the change is often made more glaring.

A method certainly pursued by at least some of the old Italian masters, consists in changing (for assimilative purposes) into the closed register low down in ascending, and into the open register high up in descending. For instance, if the notes C, D and E are to be sung ascending and descending, and the D can be sung in either the open or the closed register (is what is called an "*optional* note"), it should preferably be sung closed when ascending, but open when

descending. When that and similar exercises are mastered *forte*, they should be sung, with advisable changes of pitch, with lesser degrees of power. Lastly, alteration should be made in the power of optional notes—at first a diminuendo followed by a crescendo in one breath. The larynx in this case changes position, for a change in fulness is required—which brings us to the consideration of flexibility.

FLEXIBILITY.

This consists of the capacity of altering voice in accordance with desired power and quality, and should not be confounded with agility, which is the capacity of vocal execution that is rapid and correct. Flexibility depends upon freedom of muscular action, and the structure of the bodily parts concerned with voice—especially the throat and mouth.

The old *maestri* declared: "La voce ha buona pasta," which means that the voice is like a smooth paste, capable of being moulded into any form.

The student has to master:

(1) Alteration of power without alteration of placing:

(2) Alteration of placing without alteration of power, and

(3) Simultaneous alteration of placing and power.

Upon the first requirement I have already touched. Beginners I should remark, are as prone to alter placing as power, they having been accustomed to a wrong position of the larynx during voice emission. In most untrained singers the larynx retains too high a position. The counteracting of that tendency is one of the reasons that, for general practice, central placing is preferable to more forward.

The second requirement consists in *gradually* changing the tone colour from clear to sombre and from sombre to clear without altering the power of the voice. This is best practised at first on single notes, where,

if the changes be properly performed, the larynx moves upward and downward respectively.

The third requirement should be mastered by a diminuendo followed by a crescendo in one breath. Change from sombre tone to clear and back to sombre: from clear to sombre, and back to clear; then "ring changes" on the placings.

MESSA DI VOCE.

The term means "putting forth of voice"; an earlier-used name for the ornament is "filare il tuono" ("spinning the tone"). The ornament consists of a beautifully graded crescendo, a short retention of full power, and a diminuendo as gradual as the crescendo. By the steps described this ornament is quickly mastered, and, as Tosi (and Reeves after him) declares, a good *messa di voce* always has a delicious effect. Lablache recommended students in their early stage to give in all forty minutes per day to *messe di voce*. That may seem monotonous to some persons, but as Domenico Corri wrote: "If scholars in their practice do not themselves feel sensation of pleasure in the sound of a single note (and if not in one neither will they from a number of succeeding or combined notes), it must be attributed either to an improper manner of practice, or to the want of natural musical gifts." "A few minutes at a time of vigorous practice," he declared, "is preferable to hours of careless inattention . . . . the formation of the voice may be compared to the polishing of steel, or marble, which could not be done with leaves of roses." Further: "After the exertion on any single note, which, if practised with proper energy, will exhaust the breath, leaving a palpitation of the lungs; forbear to proceed to the next note, until this sensation is entirely subsided."

In any case, do not continue any one note past the point of complete control, and always finish by holding

the breath, *not* by letting the chest collapse; but nevertheless aim at singing longer and longer notes.

BLENDING AND PLACING COMBINED.

The exercises given under this heading are of much value introduced at this stage.

The first note of Exercise "a" should at first be forward and then be gradually placed nearer the dome of the mouth as power increases; and when at *forte*, the second note should commence with the same placing as the lower note ended. The second note should be gradually covered as it becomes louder, then gradually return to its former placing, where the third note is commenced, which should be in form a reversal of the first note and die away where that note commenced.

In singing Exercise "b," there must be no slur between the first note and the second. The second note should be begun with the placing of the first, but pass into central tone. The first note of the third bar should be sung rather louder than if there had been no pause, for a pause tends to disturb the recognition of rhythm. The gradual descent to the low F should be sung very boldly, without either slur or appreciable alteration in the position of the upper portion of the chest.

The form of Exercise "c" is taken from Nathan. Please observe that the second note of each phrase should be louder than the third. There should be no slurs, neither should power nor placing be stationary at any moment.

The tone colour and maximum power employed may be varied with advantage; and, when the exercise is mastered in its bare form, turns or other ornaments may be introduced.

It should be clearly understood that the alterations of placing are in nature combined with infinite, though often minute, modifications in the resonating apparatus, which modifications can hardly be obtained otherwise

than as concomitants of emotional changes. The exercises given are to facilitate the expression of passions and emotions, and such exercises are of great value, the power to feel and the power to express being by no means identical.

THE EMOTIONAL ELEMENT.

As soon as practicable every exercise should be sung with a meaning, the result of an assumption of tenderness, supplication, anger, or other mental state.

SUDDEN VARIATION OF POWER AND QUALITY.

A note sung with a sudden crescendo (<) expresses intense supplication; a note sung with a sudden diminuendo (>) expresses decision.

The first note of Exercise B for facilitating "Agility and Flexibility combined" should be begun decisively, then a quick diminuendo should be made upon it and continued to the note above, into which the first note should glide. The second note should be begun lightly, but it should be pressed, made fuller, as well as louder, before passing to the next note by a diminuendo and glide—and so on. Please note that when I say "glide," I do not mean "drag." Emulate the acrobat, rather than the clod.

NOTE CONNECTION AND SEPARATION.

At this stage the ways in which notes are combined in phrases should be extended. These admit of three general divisions, *viz.*, Bearing, Pointing, and Marking the voice.

"*Bearing the Voice*" comprehends all gliding movements, the notes of which the French describe as "braced."

Great care should be taken that in the attempt to give grace and smoothness to *legato* passages, heaviness and clumsiness be not substituted.

A *portamento*, or carrying of the voice over an interval, however beautiful in itself, if introduced too often in set music, is wearying to the ear.

"*Pointing the Voice*," or *Staccato* (from the verb "staccare," "to separate"), is the making of a real or apparent separation of the notes. Whenever the speed taken admits of a ready separation, that is made; if too quick for separation without ugly abruptness, each note is given a quick pressure instead, and the effect of a true staccato is thereby obtained.

"*Marking the Voice*," sometimes called "Sostenuto" (a term having two meanings), corresponds to the legato of a keyed instrument, the notes being sustained to their full value and the transition from one to another being without any slur. In the attempt to avoid the slightest slur, students not infrequently terminate the notes a little too early—thus producing staccato.

CHROMATICS.

Early in the nineteenth century, Andrea Costa, an eminent *maestro*, wrote "The embellishment of a run of semitones is undoubtedly very beautiful when *perfectly* in tune, but few singers, indeed, have the power of executing them in this way; in my experience I do not think I can remember more than five or six singers who could do so. But in the present day, alas! almost every singer must show off with a run of semitones, which they certainly would not do if they could be persuaded that when this ornament is in any degree out of tune, it resembles nothing but the whinnying of a young horse."

The difficulty usually lies, not in the lack of ear, but in lack of method in dealing with chromatics. *Singing in tune* is really *systematised singing out of tune*. On a piano or other instrument with fixed pitches, a single key has to do duty for C♯ and D♭, another key for D♯ and E♭,, and so on, whereas

(theoretically) C♯ is a *Minor* semitone above C, D♭ a *Major* semitone, no two notes being quite identical. If the keynote makes one vibration in a given time, a major third above performs $\frac{5}{4}$ of that vibration; and three such intervals yield $\frac{125}{64}$, whereas a real octave demands $\frac{128}{64}$ vibrations. Three exact major thirds being scarcely equal to an octave, tuners temper their instruments in order to divide the octave into twelve equal parts. Just as a tuner fixes certain notes, which he calls his "bearings," students of singing should, in order to master chromatics, divide their octaves into three equal parts (major thirds) and then fill in the semitones. If a chromatic scale be sung in $\frac{4}{4}$ time, each major third starts at the beginning of a bar. However, in an ordinary ascending chromatic scale, it is well to sing the first note without accent or swell, and gradually to expand the tone whilst ascending, but one should accent the fifth and ninth notes. In descending, the voice should open out into the second note of the scale. By that procedure, ease and grace are favoured.

THE SHAKE.

The qualifications for a perfect shake were given by the old Italian masters as: equality of notes, distinctly marked, easy, and moderately quick. The singers preceded every shake forming a cadence or imperfect cadence by a *messa di voce*, and the shake they increased in power and velocity simultaneously. The form of the shake is somewhat dependent upon the structure of the composition where it occurs, sometimes needing to be begun on the melody note, sometimes on the upper or auxiliary. If a grace note be written before the shake, the value of that note should be abstracted from the preceding note. If the grace note be slightly lengthened, as if hovering in the balance, it can add piquancy to one's singing.

The practice of the shake in triplets ("For Agility and Flexibility Combined") should be practised only slowly at first (great care being taken regarding freedom and placing), then it should be gradually increased in speed. Eventually, if practised as suggested, the shake becomes automatic, and the student may find difficulty in terminating it. He should always consciously attend to the first notes of a shake; may allow the intermediate notes to be pitched automatically; and lastly, should again bring his attention to bear.

COMPREHENSIVE VOCALISM.

N.B. The musical notation is employed to show the form of exercises—the key being changeable. With the exception of those described as "To Blend Registers," the exercises should be practised over a gradually increasing compass.

TO SET NOTES:- Sustained notes of equal and full power throughout.

TO REALISE "POSSESSION":- Two shortish notes followed by a long one, all sung with equal power and in one breath, none of which should be expended during the intervals between the notes.

TO TEST "POSSESSION" OF SINGLE NOTES:- A decrease followed by an increase of power—represented thus:

TO CONNECT NOTES:- (a) Two notes, a semitone apart, in one breath. (b) Diatonic Scales. (c)

FOR EQUALISING VOICE:- (a) (b) (c)

TO CHANGE PITCH QUICKLY :- (a) and descending; (b) etc.

TO TEST "POSSESSION" IN CONTRARY MOVEMENTS:-

(a) Forte throughout; (b) Bar 1 *f*, Bar 2 *p*, Bar 3 *f*; (c) Bars 1 & 2 *p*, Bar 3 *f*.

TO TEST EXPANSION OF COMPASS:-

TO OBTAIN HIGH FULL NOTES:- & TO OBTAIN HIGH LIGHT NOTES:- &

N.B. Where marked V rest, but hold the breath.

TO BLEND REGISTERS:-

N.B. Notes with tails turned upward belong to the lower ("open") register, those with tails turned downward to the upper ("closed") register.

FOR BLENDING AND PLACING:- (a) (b) no slur. *f* *pp* *f* *f*

(c) *p* *f* *p* *f* *p* *p* *f* *p* *f* *p*

(1) *f* *mf* *p*
(2) *p* *mf* *f*

FOR AGILITY AND FLEXIBILITY COMBINED:-. (a)

(3) *mf* *p* *f*
(4) *mf* *f* *p*

(b)

(c) Practice of Shake in Triplets,—then otherwise, and finished with a turn (d) A messa di voce (<>) followed by a shake,—all in one breath.

(e) and so on, throughout the scale. (f) Practise, as far as possible, the various exercises given—(1) sostenuto (*i.e.* connected but not slurred), (2) legato, and (3) staccato.

FOR CHROMATICS AND INTONATION:- Divide the octave into three equal parts (approximate major 3rds) and gradually lead into chromatic scales, as intimated below:- (a) and descending.

(b) (c)

(d) *sost.* *cres.*

(e) etc. descending.

CHAPTER XIII

ARTICULATION.

"When Demosthenes first spoke in public, it was objected to him that he could not even pronounce the first letter of his art, *Rhetoric*."—THOMAS SHERIDAN on *Elocution* (1787).

SPEECH is effected by the action of the palate, tongue, lips, and teeth, by which voice or whisper is moulded, before issuing from the mouth, according to the positions these organs then assume relative to each other. Consonants either obstruct or set free the passage through which the voice is sounded, therefore are sometimes called "voice checks." A consonantal sound cannot stand alone—it must necessarily be followed by at least a slight vowel sound. The combination of vowels and consonantal sounds is "articulation."

Vocal tone is represented in both hemispheres of the brain; articulation, whether in song or speech, normally in one only.

THE STUDY OF CONSONANTS IMPORTANT.

Many persons undertake to teach singing who act upon the principle that if the vowels be attended to, the consonants take care of themselves. Others reverse the principle, claiming that if the consonants be attended to the vowels take care of themselves. But there are singers who can produce good tone on vowel sounds and yet cannot do so in songs—consonants proving obstacles; and there are patter singers who pronounce very clearly but cannot produce tone of good quality.

In the order of evolution, voice appeared before articulation. I have described how right action can

be secured at the larynx. The combination of consonants and rightly produced vowels (and consonants cannot be pronounced alone) is a simple matter when the laryngeal action is mastered. I have judged wise to hold in abeyance the particular consideration of articulation, though, as before remarked, in ordinary teaching I introduce it early.

LOCALISATION OF ENERGY.

In order to ensure an intelligent conception of consonantal, as contrasted with vowel, mechanisms, I devised the following experiments:—

Experiment 1.—Produce a good, sustained *ah*; then, whilst retaining voice, close the lips, thereby causing the vocalised breath to pass through the nose. Open the mouth again on *ah*. "Ahmah" is the total result.

Experiment 2.—Sound *ah*, then, whilst retaining voice, raise the tip of the tongue gradually to the *ee* position, and from that to the roof of the mouth, allowing breath to pass outward on both sides of the tongue. *L* is the result, which, upon separation of the tongue from the palate produces some vowel sound.

It should be noted that in the two foregoing experiments the consonant is merely the result of checking the passage of vocalised breath.

Experiment 3.—Sustain the unvoiced hiss represented by the letter *s*, then introduce voice and the *z* sound results. Similarly, compare *f* and *v*, *th* (as in "think") and *dh* (like *th* in "though"), *ch* (*tsh*), and *j* (*dzh*), *sh* (as in "wish") and *zh* (the intermediate sound in "vision"), *t* and *d*, *p* and *b*, *k* and (hard) *g*.

By this experiment the student learns to avoid confusing the mechanism of voice with the mechanism of consonants.

Viewed from the strictly musical standpoint, consonants are interruptions in the flow of melody and

therefore should be made short and distinct, though occasionally they can be sustained for the sake of pictorial effect—*e.g.*, the *ng* and *ll* in "ding, dong, bell."

During the pronunciation of consonants the chest should not be allowed to collapse; the balance of pressure and resistance should be retained. Twice speak the sentence: "He holds his head high." The first time, exhale heavily whilst pronouncing the aspirate; the second time, snatch backward as it were, endeavouring to use as little air as possible, and to obtain as good vowel sounds as if the sentence were "'e 'olds 'is 'ead 'igh," which, for the sake of comparison, may be employed simultaneously. When there is a prodigal loss of breath on the aspirate, the false cords are too far apart; when air is economised, the false cords are nearly together throughout. A hand held before the mouth makes the contrast evident.

EXCESSIVE, UNNECESSARY, AND MISTIMED ACTIONS.

Much difficulty in pronunciation is due to making excessive movement of the parts concerned, or to introducing useless, and consequently hindering, movements.

I have already said that opening of the mouth sufficiently to allow the first finger to be introduced on edge between the teeth suffices for sounding any vowel and some consonants. The consonants referred to are: *k* and *hard g*; *l*, *n* and *r*; *t* and *d*. These should be spoken and sung after, then before, every vowel sound. If the vowel sound needs roundening of the lips (*e.g.*, *oh* and *oo*), whenever practicable make that roundening before pronouncing the consonant.

In sounding *p*, *b* or *m*, there is a closure at the lips; in *f* and *v*, *s* and *z*, *th* and *dh*, *ch* and *j*, *sh* and *zh*, the mouth is nearly closed. When pronouncing a consonant belonging to either class make the alteration to the position of the connected vowel suddenly.

It is most important that the mouth be not *gradually* moved from position to position, for, otherwise, additional sounds other than those intended are perceptibly introduced during the transition.

Singers need to be careful not to introduce consonantal sounds too early; for, if the last syllable of a word expire too soon, the substitution of another letter or syllable is needed to complete the value of the note.

Care should be given to the distinction between voiced and unvoiced consonants. Many people pronounce "his" "hizs" and "have" "havf," for they continue whisper after they have finished voice.

The misplacing of the aspirate is very common among English singers, and may be heard in some Italians. (Even Caruso fell into the error.) It often results from having neglected the "coup de glotte"; but, as Italian contains no aspirate, some Italian singers may view its insertion as of little consequence. Martinelli is a notable exception.

THE LETTER "R."

R is producible in two ways; but only that effected by a vibration of the tip of the tongue is suitable for a singer. Sims Reeves remarked that *r* should be rolled when a rough effect is intended. Examples are "rough," "rage," and "to arms!" but not "ran," the word suggesting lightness.

In such words as "fear" and "dear," only one vowel sound ("ee") should be heard, and the tip of the tongue should be raised at the close of the word in order to form the *r* sound.

SYMPATHY BETWEEN VOWELS AND CONSONANTS.

It should be observed that the degree of energy with which consonants are pronounced has a marked effect upon the import of words and also of the vowels employed. A vowel sound preceded by an explosive consonant cannot be commenced *piano* if the consonant be pronounced energetically.

This fact is connected with the ability of stutterers and many stammerers to sing without hesitation. Words suitable for song have an emotional significance, and thus when they are spoken expressively their vowels require to be dwelt upon, whereas, in cold statement of matter-of-fact they are passed over quickly. The stammerer over consonants in speech is usually wont, when singing, to prepare himself for the beginnings of his vowels, consequently is helped over his consonants.

Stammering is usually connected with excessively energetic, but diffident attempts to avoid the repetition of sounds which constitutes stuttering. Energy being misdirected, in the attempt to overcome the stutter, the sufferer becomes unable, temporarily, to speak at all—in other words, he stammers. If you well bend an arm at the elbow, then bend it still further energetically, you are doing something analogous to what the stammerer does—both are making a double contraction, but you are making it intentionally, whereas the stammerer does so despite his desire to the contrary. Singers and speakers should sedulously avoid, except in mimicry sometimes, double contractions of muscles in connection with the emission of both vowel and consonantal sounds.

Please do not conclude that the endeavour to avoid the double contractions is everything necessary to cure stammerers: speech disorders are very complicated in origin. In this connection I beg to refer readers interested in the subject to my book *The Cure of Stammering, Stuttering, and other Functional Speech Disorders.*

CHAPTER XIV

NEIGHBOUR-SAVING DEVICES.

"I never could count how many causes went to produce any given effect or action in a person's life."—THACKERAY.

I WAS once acquainted with a young man who complained that he had been so perturbed by his vocal endeavours being mimicked by persons outside his house, that he had commenced to muffle his voice. I asked "How?" and he explained that he kept a tea-cosy over his head when he sang. My purpose in this chapter is not to advocate that procedure, but to describe means whereby, without an artificial silencer, you will be enabled to consider the feelings of yourself and your neighbours. These special exercises can be practised in the privacy of one's own room and even, in some instances, when walking in the street. When a prisoner of war, in German hands, I made use of these exercises when practicable, and, consequently, though I temporarily lost some of my vocal technique, I retained the freshness and sustaining power of my voice. But the exercises can help one to attain, as well as to retain, great facility in the utilisation of the false cords and ventricles, and also good pronunciation in speech and song. At first the exercises should be mastered in the order given; later, the last given exercise may be used almost exclusively.

1. Take a full breath, hold it, compress it, and then, in one breath and without letting out breath during the intervals, say sentences, each word mono-

syllabic and beginning with a vowel, *e.g.*, "All-are-up-an-elm," "Ask-us-of-our-aims," "Eat-up-all-old-eggs." Speak fairly loudly throughout, then softly, then very loudly, then vary power on alternate words. Remember that the chest must be kept supported by the drawn-in abdomen until after the sentence has terminated.

2. Using the low part of the voice, pronounce the following illuminative sentence in one breath, and, as with the sentences in Exercise I: "Are intrigues obstructing our aimless efforts?" You should not growl, nor "tighten" in speaking, either at a low or a high pitch. Imagine all the vocal tones as on a level; straining is useless and defeating.

Having got the right effect with the low pitch, answer at a high pitch: "Intrigues are obstructing our aimless efforts." Lastly, alternate single words (in question and answer), and, later, syllables, at high pitch, and then low pitch.

3. This is to ensure a ready change of placing. Say in an ordinary colloquial tone and about the middle of the voice: "An epicurean's adage," then, without taking a fresh breath, lower the larynx and say, using full, pompous tone: "Of—all—useful—arts—I—ardently—admire—only—eating."

4. Up to this point you will have employed only such words as begin with vowels. Now use this sentence: "Only—he—eats—hard—eggs."

You will observe that the second and fourth words begin with an aspirate. What you have to do is to get as pure and ringing a quality on a vowel sound following the aspirate, as if the word commenced with a vowel —and (please bear in mind) if you are to do that your chest must not collapse.

5. This sentence introduces as an initial letter each consonant in turn. (Pronounce "Xenophon" as "Ksenophon"—the "X" like "xc" in "except"

—not "Zenophon.") "A big cat did eat from Grandad's hat. I just kicked Little Master Nosey out, putting quick resolution soon to use verily, without Xenophon's youthful zeal."

Recollect that voice is made in the larynx and nowhere else. Do not allow consonantal obstructions to vitiate vowel quality; in other words, be careful to locate energy aright, and refrain from attempting to make power by excessive contraction of parts where the explosions occur.

6. This is composed of whisper instead of voice. Practise all the foregoing exercises, but more still employ single vowel sounds ("ah" especially) in one breath. You should start with a slight click (a result of the sudden separation of two moist surfaces—the false cords), just as when using voice. Be careful to avoid an aspirate and to avoid any feeling of tightness or of flaccidity. The whisper must be steady throughout, the chest kept supported, and the whisper must be terminated by holding of the breath—a return to the kind of condition present before the whisper commenced. Think of the breath as if it were entering, not leaving, the body. Sometimes cut the whisper into three or more parts, separated by holding of the breath. Gradually increase the length of the whisper and whispers.

In this odd-moment practice, it is extremely important that the bulk be performed on sounds commencing with the vowel element, and that the student should frequently return to isolated vowel sound in order to counteract any possible tendency to wrong action at the false cords. Occasionally, hold the breath entirely and meanwhile make movements of the mouth as in ordinary good speech, in which case not even whisper will occur, the false cords remaining in contact throughout.

Please to observe that these exercises should not be practised immediately after a full meal. Loading of

the stomach interferes with the desirable freedom of diaphragmatic action especially, and also draws extensively upon the nerve and blood supply. Further, for vocal and whispered exercises the larynx and adjacent parts should have ample nerve supply, for otherwise dryness and irritability of the throat result.

Should, despite hygienic precautions, a cold happen to occur, the exercises may advantageously be omitted for a day or so. If previously in full practice, the throat is supplied with abnormal, but decreasing, nourishment for about three weeks, so the person concerned is a gainer. The substitution of calm reflection for vocal and allied exercise may often prove a means of establishing mental associations which will enhance and hasten later progress. Titiens, when at the zenith of her fame, declared: "I find, every day, something to learn or something to avoid."

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